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REFLECTIONS ON THE NATURE OF THE AESTHETIC

IN his "Sacré Cœur de Mont-Martre" [1] Utrillo paints in subdued colors. He uses reds high in tint but of meager saturation. His blues and greens are neutral and his gently moving brush accents the evanescent shapes in a black which rises just above the threshhold of aesthetic perception. With careful choice of local color and disciplined strokes—with these deliberate elements—he achieves artistic impact.

In the eye of the observer the artistic impact so achieved depends upon perception of the elements. One must see the redness and the greenness in their peculiar shades and tints to grasp the aesthetic whole. Yet if one were not to see them in their artistic setting—to see them in isolation—they would not evoke the same reaction. They would appear as severed mem-

[1] William P. Seligman, *Collection* (New York).

bers of a once living substance, not having lost their external form but deprived of their underlying meaning. The colors, lines and masses have significance for the eye in relation to the whole so that in this dependence they are posterior to it in perception. To the extent to which they are prior in perception to the whole they do not stimulate the aesthetic sense nor evoke an aesthetic reaction. Like separated members of a once living substance they lack the vital principle which resides in every part of the living being: the vital principle which is totally in the whole and totally in every part.

It would be wrong to define the eye by its organic structure without reference to the vitalizing principle. An eye lacking animation is only equivocally an eye.[2] So it would be wrong to define the work of art by the integration of the parts without relation to the aesthetic whole. A work of art deprived of inner meaning through the absence of the animating form is artistic by equivocation. The observer viewing the " Evening Rain on the Great Pine Tree at Karasaki " of Utagawa Hiroshige and seeing only a juxtaposition of oriental shapes and colors without the immanent form does not " see " that matchless work of art.

For this reason the attempt to reach aesthetic insight by prior analytical consideration of the elements might seem to be futile. Yet such is not the case. For in the course of running the eye over the picture aesthetic insight is achieved. At a certain point in the search the eye no longer sees the part in its isolated quality but sees it fuse with the underlying form. The part becomes for it truly a part in the perception of the vital principle. The insight so achieved justifies the initial analytical procedure.

Still one must exercise caution not to confuse this initial analytical procedure with that which occurs once the unifying principle is grasped. Then the eye in virtue of its penetration to form proceeds to absorb more and more the articulation of the total work of art—to see the vital principle manifesting

[2] Aristotle, *De Anima*, II, 412b 20.

itself in varied ways in the many parts. It focuses, point by point, upon the distinct elements in order to see, in each one, the peculiar revelation of the underlying form. The eye must make the first analysis to have any grasp of form at all. But it makes the second to reach profound understanding. And it needs both to arrive at the goal of aesthetic insight.

Sometimes artists complain about critics who confuse the initial process of analysis with the subsequent aesthetic process. The critic can avoid the complaint only by clearly determining his purpose. If he intends to lead the reader through the psychological steps necessary to apprehend the form of a work of art he must exclude from his mode of conceiving and exposing the subject anything which supposes aesthetic insight. If he intends to unfold in a reader already possessed of the fundamental insight a deeper knowledge of the form in its varied manifestations he must exclude anything which has no relation to such an insight.

The artist complains about these analytical considerations of his work when they are confused in the mind of a critic. But he rarely complains about another form of aesthetic analysis which is quite different from them in that it does not lead to aesthetic insight of itself nor does it increase it when it has already been achieved. This is the analysis proper to philosophy. Perhaps its very remoteness from aesthetic experience is the reason for the indifference of the artist. It cannot be related clearly to his work and for that reason he can take no clear stand either for it or against it. For the most part he feels that, since it does not yield a practical aesthetic result, it is of no interest for him.

And yet, though the philosopher's analysis may not of itself lead to aesthetic insight or intensify it once acquired, it has a definite relationship to the aesthetic—one which should draw the artist to philosophize about his art. For it reveals a truth about the work of the artist which is not had in production and contemplation itself and this truth should attract him by reason of the love he has for his work. He should be led by that love to seek knowledge of his art wherever it is obtainable. The philosopher considers the problem of the nature of the aesthetic

because it is a problem and he needs no other motive than the natural desire to know.[3] But the artist should philosophize about the aesthetic because he loves it and because that love impels him to comprehend it. This is true not only of the active artist but also of anyone with aesthetic insight—he should view the philosophy of art as St. Augustine viewed theology of the faith, as something to be pursued by the sheer *pondus amoris*, the inertia of faith itself which once set in motion will not allow the mind to rest;[4] the inertia of the aesthetic which will not remain satisfied with partial knowledge.

The idea which I propose to sketch out in these few pages seems to me to arise quite naturally from such an approach. It implies the overflow of the experience into speculation, for it deals with a quality which predominates in aesthetic experience itself, that is to say, the quality of beatitude. Like a lens which is selective because of its peculiar refractive index, artistic experience accentuates this aspect and leads the Thomist mind naturally to consider the aesthetic as a kind of partial beatitude.

If we were to ask Utrillo to describe the mental processes involved in the painting of the " Sacré Coeur de Mont-Martre," most probably he would speak of them as essentially non-intellectual. At least that is the way he would describe them if he were to look upon the creative activity as most artists do. Artists tend to conceive their work by contrast to the plan-drawing of the architect, who elaborates the finished work from preliminary sketches, or by contrast to the geometrician, every step of whose activity is predictable and rational. Utrillo would probably accentuate the unplanned and the unpredictable and the non-rational, if not the irrational. And all of these traits, according to the vague intuition which he shares with Nietzsche and the existentialists, seem to correspond to the appetitive. For Utrillo, an artist who would proceed academically from the preliminary sketch to the finished work, without allowing the process to spring from unplanned and unpredictable feeling, would be devoid of creativity.

[3] Aristotle, *Metaphysics*, I, 980a 22.
[4] E. Gilson, *St. Augustin*, Introd., Chap. II.

Of course, it is undeniable that the intellect enters into the process. The rational predominates in such a detailed phase of artistic growth as the gradual domination of the medium. But it is one thing to admit its presence and another to pose it as the substance of the process. It would seem truer to the artist to affirm that creative activity consists of bursts of rational control tied together by the continuity of the appetitive drive.

The artist inclines toward this view of things because of the quality of aesthetic experience—the pleasure which is the fruit of creativity, and which seems rather appetitive than rational. He conceives of the contrary quality as existing in such a purely intellectual activity as geometrical reasoning. Not that this is a precise conception for him since he cannot so clearly focus on the quality of aesthetic enjoyment as he can upon the quality of geometrical reasoning. But nevertheless it seems more appetitive than intellectual as is confirmed by the accompanying state of the emotions. The ecstasy of the artist and the vivid emotions, sometimes rising to the point of the painful, make aesthetic experience seem worlds apart from what he conceives to be the experience-quality of geometrical reasoning.

The Thomist, even with this meager datum alone to go on, cannot fail but be struck with the similarity of the problem to the Thomistic analysis of ultimate beatitude. For in the problem of what constitutes ultimate happiness for man there exists a similar difficulty in determining for this operation the exact dosage of the intellectual and the appetitive. There exists also the similar "natural" inclination to weight the response in favor of the appetitive. The solution of St. Thomas, that ultimate beatitude is essentially an act of the intellect, brings out this natural inclination by awakening a certain resistance in the mind meeting it for the first time, just as the assertion that aesthetic experience is essentially rational awakens resistance in the mind of the artist.

Yet it is evident, once the problem is faced in its theoretical purity, that the basic question, in both cases, concerns the nature of the operation which attains the desired goal: in the

one case, the goal of moral activity; and in the other, the immediate goal of artistic activity. And the answer to this fundamental question in both cases is that the desired operation is one which is possessive since it must seize upon the goal and thereby make it present. To answer the question concerning the ultimate goal of human life St. Thomas considers the natures of the possible activities which might be thought to achieve this end: the appetitive activity and the intellectual. He excludes appetitive activity from the field of possession, for appetitive activity has a twofold function: it has desire for an object which is absent; and it takes delight in an object which is present. But it has no intermediate activity which effects the presence of the object. By elimination, therefore, the activity of possession must pertain to the intellect.[5]

In analyzing artistic activity we may use the same method. We may begin by distinguishing the two facets of the movement toward the goal: the rational apprehension of the media and the goal; and the appetitive drive which carries us on. To which of these does it belong to achieve conjunction with the goal? Certainly not to the appetitive drive for this either carries us toward the goal when we have not as yet achieved the work of art; or it takes delight in the achieved goal—the completed work of art. But it has no intermediate action rendering us in possession of the term. By elimination then we must conclude that the rational formally unites us to the desired end and thereby constitutes the essence of the aesthetic.

Of course the factual unfolding of the creative process is more complicated than this idealized analysis indicates. It involves a continual partial realization and partial delight. And in not reserving all the quality of achievement and delight for the final termination of the movement it makes for a certain obscurity in the experience of the process. The subjective reaction is not analyzable in the way which the theory indicates so that from this point of view the rational does not seem to predominate. True as this may be, I am not concerned in this article

[5] *Summa Theol.*, I-II, q. 3, a. 4.

with explaining the concrete situation of the artist but with developing the aspect of the problem which is parallel to that of ultimate beatitude. For it seems clear to me that the parallel character of the two questions makes possible a methodological shortening of the investigation. What has been discovered to be true in one (the solution of the problem of ultimate beatitude by St. Thomas) must necessarily have analogous applications in the investigation of the other (the aesthetic experience).

St. Thomas maintains, in the famous position which Aristotle before him defended, that the ultimate happiness of man consists essentially of an act of the intellect contemplating the highest possible object.[6] Upon this act of the intellect follows delight in the will which is brought to rest by the obtaining of so great a good. St. Thomas holds that the *quies* of the will in the possessed good of the intellect is not itself beatitude, nor a part of the essence, but that it pertains to its integrity. Without *quies* (delight) the ultimate operation of man would lack integrity (just as a man without an actual faculty of reason would be essentially a man but would lack the integrity of human nature). Nevertheless it is true by abstraction that ultimate happiness would be possessed even if the act of delight did not co-exist with the intuition of the intellect.

If the ultimate operation of human nature is essentially intellectual then those operations which fall short of the ultimate but share its quality must likewise essentially be intellectual. For such operations are participations of beatitude, occupying a median position relative to it and as is true of all means partaking of the character of the ultimate term. However they may appear to us subjectively they must be essentially intellectual since they are intermediate between total *ignorance* of the ultimate and beatifying *intuition* into it. Moreover, since they pertain to the order of the intellectual and are deficient in this order their character of intermediacy must result from a deficiency in the intellectual. For this reason if they are studied

[6] *Ibid.*

from the point of view of the possible ways in which they can be deficient in the perfection of the intellectual intuition of the ultimate their types and characteristics can be determined a priori.

Now Aristotle holds that ultimate beatitude is found in the highest operation of the noblest faculty concerning the most perfect object—or as St. Thomas presents the same, in the perfect possession of the greatest good.[7] An operation which, though short of such perfection, pertains to its line (that is, partially realizes it) must be deficient either in the quality of possession or in the perfection of the object possessed. Let us first consider, then, an operation which is deficient in the quality of possession.

An imperfect intellectual possession fails to attain the intelligibility of the object even relative to the capacity of the one who knows it. Such a deficient possession would be found, for example, in the student of geometry who fails to see the evidence of the principles respecting a particular figure, or who, though seeing the evidence of the principles, fails to see their application in complicated figures. His possession is imperfect for it only partially assimilates the intelligibility of the object even though all of that intelligibility is within the power of his mind.

Quite a different situation is encountered in the knowledge of an object which is not within the power of the mind as is the case in our knowledge of God. Obviously some knowledge of God is natural to us for it is found at all stages of cultural development and in all degrees of perfection culminating in the natural order in the scientific insight of philosophy. Whatever may be the level of sophistication and insight in this knowledge as a partial realization of ultimate beatitude (in the line of knowledge, for it should be clear that the line of appetite and morality as such is being methodically excluded), it must cause a partial realization of the happiness found at the term. It must cause a certain joy in the soul though not the full joy of beatitude because of the imperfection of the possession.

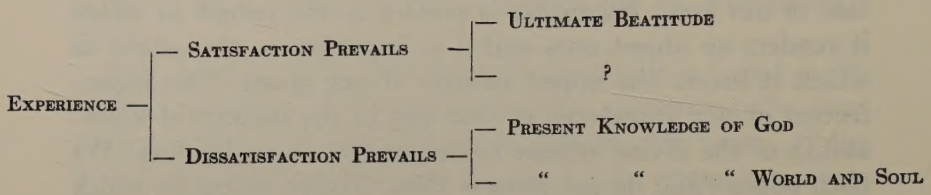
[7] *Ibid.*, q. 2, a. 8.

The imperfection of possession is particularly obvious in our knowledge of God for so much of His intelligibility lies outside of our ken. Possession is perfect to the extent to which it renders an object ours and it is imperfect to the extent to which it leaves the object outside of our grasp. The imperfection of our knowledge of God lies in the infinity of knowability of the divine essence exceeding our understanding. We both possess and do not possess Him. To the extent to which we possess Him there is happiness and a partial realization of beatitude; but to the extent to which He eludes us there is unhappiness and a feeling of dissatisfaction.

The knowledge which we have of God is deficient in the ratio of possession but not in the ratio of the object possessed. God could not be greater nor could there be anything greater than Him. But the knowledge which we have of objects lesser than the divine nature can be deficient and is doubly deficient—both in the ratio of possession and in the ratio of the object known. The things of the world which surround us are infinitely below the perfection of God and therefore knowing them, even perfectly, cannot give us ultimate beatitude.[8] Insight into the material world and even insight into our own souls falls short of beatitude in the imperfection of the object. Such insight, it is true, since it belongs to the line of the intellectual and is a partial realization of the final insight, gives joy to the mind. But insofar as it is imperfect, it also gives sorrow or at least dissatisfaction and the sense of the necessity to push on. The dissatisfaction caused by defective insight co-exists with the joy and is so commingled as to be experimentally inseparable. It may even, perhaps, enjoy psychological predominance according to the general psychological tendency of the unpleasant to prevail over the pleasant. But it is clear, at least for philosophical analysis, that the dissatisfaction is only a partial aspect of the total experience. And this gives rise to an interesting question: is it possible to isolate some experience in which what is theoretically true could be rendered sensible—in which the

[8] *Ibid.*, q. 5, a. 5 c.

pleasant, though not completely overpowering the unpleasant, might predominate over the latter?



This question arises naturally from our considerations up to the present. For our approach to the problem up to now has revealed the presence of factors in the phenomenon of human knowing which we might suppose to form combinations in varying ways and varying intensities: the factor of possession and the factor of the possessed object. We have considered particular combinations in which there is imperfection in the factor of possession together with perfection (the case of the knowledge of God) or imperfection (the case of the knowledge of the soul or of material things) in the factor of the object possessed. Might we not now conceive of a combination in which the factor of possession (that which most closely resembles the ultimate) would prevail? If such an experience were possible it would create a striking sense of satisfaction and would be marked out among other human operations not by reason of an essential difference but because the quality of beatitude found in all would predominate in this one.

Of course, I am not so humble as to pose a problem in the course of an article which I do not think I can solve. It seems clear to me that the desired combination is found in the aesthetic experience of the artist with its many variations. This experience takes a place of pre-eminence by the satisfaction it causes and it seems richer than the experience we have in knowing God or our own souls or the material world, where the element of insufficiency and imperfection predominates and where we are more impressed by the character of defect than by the quality of possession.

It is true that the knowledge which we have of God, even

on the natural order, sometimes provokes a powerful reaction. And it might be thought that this should constitute the most striking approach to the quality of beatitude in present experience. But it seems to me that this is not true, for the natural knowledge we have of God always involves consciousness of a great mystery lying beyond. We sense the tenuous character of our grasp upon Him and so that knowledge never rises to the acute level of subjective satisfaction found in the contemplation of the aesthetic. If this be true of our knowledge of God it is even more true of our knowledge of ourselves or of the world. There not only is the possession imperfect but the object possessed is also defective.

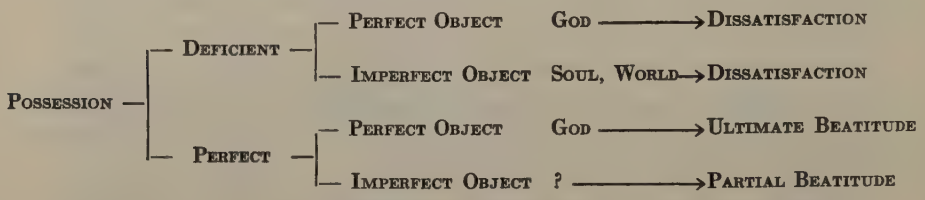
The defective character of our possession of the material world in knowledge is surely clear in the necessity which we sense to grow in our understanding of it. We never feel that we have done more than approach a little closer to a nearly infinitely removed total knowledge, so much so that the growth of our knowledge itself increases our sense of the remaining infinity to be crossed and thereby accentuates our dissatisfaction. We know that we have not exhausted the object and we know this by the very act of apprehending part of its intelligibility. By reason of this knowledge we are led to multiply and organize our concepts indefinitely as if we were seeking a term at the end of an infinite process in which we would totally exhaust the intelligibility of the object in an infinite number of concepts.

The movement and dynamism of thought are rendered sensible to us in this process of multiplying concepts. For the distinction of concepts leads to the judgment and we know, in the act of judging itself, that the object is more than we apprehend it to be under the conception of the predicate—not more in reality (for the reality is grasped) but more in the knowability of that reality.[9] In judging we have knowledge of a beyondness—the beyondness of the existentialist which is the logical basis for our feeling of dissatisfaction and of longing for a goal

[9] *Summa Theol.*, I, q. 14, aa. 7 and 14; and a. 1, ad 2.

not yet achieved. Quite contrary to this phenomenon of elusiveness the knowledge of beatitude of its very nature excludes the sense of beyondness for in it the object is totally within our grasp.

The logically possible experience to which we have referred is suggested by symmetry of division:



It is an experience in which possession is perfect though the object be imperfect. We might surmise from what we have seen that such an experience would form a vivid content for our minds. The ratio of possession would predominate in it and thus it would acutely mirror the quality of the ultimate operation. But do we, for a fact, have such an experience? Do we have a knowledge which gives the satisfaction of total possession and eliminates the dissatisfaction of beyondness? It seems to me that we do both in the field of mathematics and in the realm of artistic experience, and I want first of all to consider the effect of mathematical knowledge.

It seems to me to be a matter of experience that the reasonings of mathematics, when the mind adequately grasps them, awaken a far more vivid response than those of philosophy or of purely empirical science. The mind feels a great joy in finding a rigorous mathematical deduction exemplified in a sensible object in the field of mathematical physics.[10] We express the joy by speaking of the beauty of the reasoning, the elegance of the proofs and the perfection of treatment—so many aesthetic predicates. No other field of knowledge awakens a comparable response. There are other intense reactions, of course, of an

[10] J. C. Duncan, *Astronomy* (Harper Bros., 1935), p. 204, where mention is made of Kepler's reaction to the discovery of the third law of planetary movement—the Harmonic Law.

entirely different character. The moral reaction to ethical reasoning, for example, may have a more profound effect upon our lives than mathematical syllogizing but this reaction pertains to the order of appetite—to the moral order and not to the line of the intellectual participation in beatitude. Moral reasonings may guide us more profoundly but they do not evoke the response peculiarly found in mathematical reasoning. The reaction of the metaphysician, seeing in the complexities of human action an exemplification of the ontology of dependent being, may be intense but again it has not the quality, the pleasure and satisfaction, found in mathematical thought. He always senses a beyondness in the object—something which seems to remove it from his grasp, not only in the sense that he has not yet achieved total knowledge, but in the sense that total knowledge seems unattainable. His fundamental feeling is one of melancholy and frustration in the pursuit of a science which does not seem proportioned to his capacity. Aristotle brings this out when he refers to metaphysics as a divine science —the proper science of the gods rather than of men—whose pursuit by man must be justified.[11] The metaphysician senses that he is as one who holds a precious thing in a vessel hardly suited to contain it—an object which is great in itself but imperfect by reason of the mode of the container (like the knowledge by intuition of essence in the separated state).[12] The mathematician, on the other hand, knows no such frustration. He pursues an object which he knows to be quite within his capacity. His attitude is confident and bold whereas the attitude of the metaphysician is hesitant and timid. And it is this attitude which indicates the quality of the experience. May we not surmise, then, that in mathematics we see the quality of beatitude present in a science whose possession of the object is perfect?

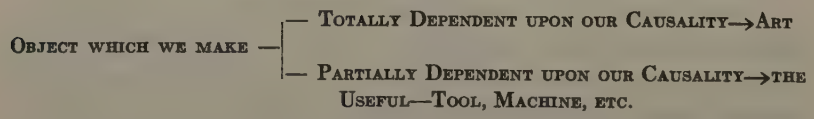
The factor which renders mathematics such a pleasing experience, so delightful to the mind, is that of perfect possession.

[11] Aristotle, *Metaphysics*, I, 982b 30.
[12] *Summa Theol.*, q. 89, a. 1 c.

This factor is not found only in mathematics as can be indicated again by a preliminary logical construction. In mathematics we have perfect possession (actual or potential and understood to be actualizable) of an object which exists fundamentally independently of our minds and which we know through the action of the world upon us. Therefore, to put the same idea in a simpler form, we have perfect possession of an object which we *do not make*. We can conceive of another possibility symmetrical to this one: perfect possession of an object which we *do make*.

Let us consider this second possibility for a moment.

If we make an object we must have knowledge of it. For knowledge is the principle which determines an agent to act. Knowledge, or possession of the singular term of the action, is the fundamental postulate of all action.[13] The thing which we make, therefore, is necessarily known to us. But again there are two possibilities: either the thing which we make only partially depends upon our causality and therefore is only partially known to us; or it is totally dependent upon our action and therefore is exhaustively known.



If the thing which our knowledge determines us to make depends upon our causality only for accidental formal modifications—as is the case in artificial products, such as a tool, or a machine—then our knowledge of it will not be exhaustive and we will not experience a strikingly different quality of human satisfaction. For the object only partly depends upon our causality and is, therefore, only partly possessed. Our

[13] *Ibid.*, I-II, q. 1, a. 2 c.

knowledge of the accidental modifications is complete but our knowledge of the total object is incomplete for it is much more than those accidental forms—it is the material itself and the infinite possibilities of actualization of the material. These possibilities enter into our notion of the object—the definition of a tool, or a machine or a bridge—and make us aware that the object itself indefinitely exceeds our grasp. Thus we are aware of the mysterious beyondness which produces the feeling of dissatisfaction.

If, on the other hand, the object is totally dependent upon our causality it is therefore totally known to us and the possession is perfect. In such a case nothing of the object lies outside of our grasp or of our action. If there were something beyond both, by definition it would not pertain to the object. In such an experience the dissatisfaction is eliminated by the awareness of total possession—of total grasp—and it must obviously create a striking human reaction, clearly mirroring the quality of the ultimate. Such, it seems to me, is the aesthetic experience.

The aesthetic experience is a perfect possession of an imperfect object—an object short of the ultimate desirable good. It is perfect in possession because the object is no more than what it is seen to be. Nothing outside of the knowledge of the artist pertains to it. It is the decoration, harmony or composition which is totally self-sufficient, into whose definition the beyondness of the material substratum does not enter. Anything of the matter which is not assimilated into the object by way of intelligent apprehension does not belong to it. And that which is assimilated is brought in by way of intentionality determining the active capacity to produce the singular effect. The block of marble carved into a statue is aesthetic insofar as it is a self-sufficient intelligible whole, completely understood, at least by the artist. Whatever lies beyond such a grasp, the infinite possibilities of actualization of the material principle, lies also beyond the field of the art object as such. The indefinite and the mysterious, in this sense, do not pertain to it.

The imperfection of the object aesthetically intued takes, of

course, from the satisfaction of the experience, but not in such a way as to lower this experience to the common qualitative level of other human reactions. The artist, sensing this imperfection together with the delight of the achieved result which he so thoroughly understands, is impelled to perfect it ever more. He submits himself to a dynamism whose force is supplied by a drive toward a higher and higher productive perfection, toward a greater work, so that the intelligibility of the product approaches closer and closer to the ultimate intelligibility of beatitude. Of course the term of the movement is always infinitely removed from the ultimate but the sense of the movement is toward it. When the artist paints a decoration, a design whose total entity is self-contained, he achieves a satisfying work which he totally understands. But he could achieve an even deeper insight if he were to produce a more articulated product. He could produce an intued deeper intelligibility and it is this possibility which drives him on, and supplies the movement in art. The young Beethoven and the mature Beethoven may not differ in the ratio of aesthetic possession found in their masterpieces but certainly they differ in the perfection of the achieved work, in its integrated intelligibility. So a decoration may not differ in the ratio of aesthetic possession from an etching of Rembrandt but it certainly differs in the level of intelligibility of the object possessed and the degree of this difference is sensed in the greater intensity of the resultant reaction.

The dynamism which drives the artist to more complicated expressions of his capacity within the field of the aesthetic may be compared to the ultimate in another interesting way. For the artist by the complexity of his product mirrors an ever greater manifestation of his full rational intelligibility. So in his artistic activity he approaches step by step to a product which would be the full projection of his rationality. And of course such a projection would be a creation by means of which the total rational nature would depend upon his action. That would be obviously an impossible goal. The aesthetic and the creative converge, in that sense, to the same term—one which

can never be reached by purely aesthetic productivity. It would be the full penetration of the total intelligibility of his own nature, which is necessary to the Creator in order to produce it, and is necessary to the beatified to rest in it. On the natural plane, then, which is the plane on which we must explain the natural aspect of the aesthetic, the full intelligibility of rational nature is possessed by the Creator as the presupposition to action by means of which He produces the creature. Likewise the full intelligibility of the rational is the term of the movement of the artist in his creative activity. And it is also the term possessed by the beatified.

The quality of the ultimate operation of man, then, that it be a perfect possession of a perfect object, is necessarily mirrored in every other operation of the intellectual order short of the goal. Every act of the intellect in some way reflects the perfection of the ultimate. But this perfection is manifested in greater or lesser intensity in the various human experiences. Both theoretically and by way of actual observation it is manifested most clearly (that is to say, as most noticeably differing from other reactions) in those actions in which the deficiency is rather from the side of the perfection of the object than from the side of the perfection of the possession itself. So those operations of the mind even so sublime as the natural knowledge of God fail to achieve this quality in a striking way because the possession is imperfect. Whereas those operations in which the perfection of possession is not deficient (such as is found in mathematical thinking, where the object is quite within the grasp of the human mind) tend to give this ecstatic impression in a noticeable way. That is why we refer to mathematics in terms which are properly aesthetic: that its reasoning processes are beautiful, harmonious and elegant. But even mathematics is not the highest realization of this reaction. Rather its deepest exemplification is found in that operation where perfection of possession is without defect (because the total entity of the object is no more than it is conceived to be) and the perfection of the object itself transcends the mathematical (in that it is a deeper manifestation of the intelligi-

bility of human nature). This is found in artistic activity in all of its various forms and it is to this activity that we apply the term " aesthetic " in a most proper sense.

The artist is not, then, a simple imitator of nature. He is rather one who takes into himself the intelligible forms of reality and constructs with them wholes which he totally understands. He works the material slowly until its formal possibilities emerge before his eyes—thereby coming to an understanding of them—and creates with these forms a self-contained whole. Whatever of the material lies outside of this whole does not pertain to the work. He views a sunset, an object of natural beauty, and allows his imagination and his mind to dwell upon it until the intelligibility of its form becomes clear to him. Then he " paints " the sunset, that is to say, he constructs an intelligible whole out of those of its forms which he has assimilated. The " painting " of the sunset as an artistic whole is no more than the integration of those forms. It is not the infinite unassimilated knowability of nature. So in viewing a great painting, such as Utrillo's " Sacré Coeur de Mont-Martre," or the line drawings of Hokusai, we feel an entirely different reaction from that which we feel when we view the natural subject itself. We have a sense of understanding which progresses to the extent that we approach the understanding of the artist. We feel that the object is self-contained and enclosed, whereas the natural subject in its natural existence gives an impression of mystery and infinite beyondness. We do not advance our understanding of the work by comparing it with nature but by gradually apprehending the vital whole—the formal principle according to which the artist constructed it.

The aesthetic whole, therefore, cannot be defined without reference to the vitalizing principle any more than the eye or the body can be defined without reference to the soul. But this does not mean that it cannot be apprehended by a process which supposes no preliminary knowledge of it. If this were not the case the aesthetic whole would either be immediately intued or lie forever beyond our grasp. Rather, the eye of the observer wanders casually over the parts of the finished work,

with no understanding of the true principle of life, whose knowledge guides the eye of the observer with insight, till suddenly at a certain point in its movements it no longer rests materially upon the parts as isolated qualities but sees them fuse together in the unity of the formal principle. Then the eye has insight and the great joy of aesthetic delight so that it senses, short of beatitude, the quality found in an infinitely higher degree in the ultimate operation of human nature.

KEVIN A. WALL, O.P.

St. Albert's College
Oakland, California

THE CONCEPT OF THE INFINITE IN THE PHILOSOPHY OF ST. THOMAS AQUINAS

IN his *Summa Theologiae*, in discussing the Infinity of God, St. Thomas defines *infinite* thus: " a thing is said to be infinite by reason of the fact that it is not limited." [1] Substantially the same definition occurs in the *Quaestiones Quodlibetales*: " Infinity . . . is predicated by reason of the fact that [something] is not limited " ; [2] and in the *De Potentia*: " infinity is predicated by a negation of limit." [3] Infinity, then, is predicated by a contradiction of finiteness, *per remotionem finis*; it is said of that which is unending, unbounded, interminable.

St. Thomas undertakes, in the *De Veritate*, in an article on the Divine Power, to analyze the concept of the infinite; he writes:

. . . infinite is distinguished in two ways. In one way, it is distinguished according to potency and act. The potential infinite is predicated of that which consists in an uninterrupted succession, for example: the generation of bodies and the division of a continuum; in every such case there is a potency to infinity, one thing always following another. Actual infinity, on the other hand, would involve something like positing a line without end. In another way, the infinite is distinguished as necessary and contingent; the reason for this distinction may be shown in this wise: infinity, by its nature, is proper to the order of quantity, but quantity is predicated primarily of discrete quantity rather than of a continuum. Consequently, to determine the distinction of the necessary and the contingent infinite, it must be observed that a multitude may be either necessarily such, or it may be so only contingently. A multitude is a necessary multitude, if, as for example in a series of

[1] . . . infinitum dicitur aliquid ex eo quod non est finitum (*Summa Theol.*, I, q. 7, a. 1 c.).

[2] Dicitur . . . infinitum ex eo quod non finitur (*Quodl.* III, q. 2 c.).

[3] . . . infinitum dicitur per remotionem finis (*De Pot.*, q. 1, a. 2, ob. 8.).

subordinated causes and effects, each member has an essential dependence on another: thus, the soul moves the natural heat, by which are moved the nerves and muscles, which, in turn, move the hands, which move a stick, by which a stone is moved; in this series, each one of the subsequent members depends necessarily on one of the preceding. On the other hand, a multitude is said to be contingent when all the members contained in the multitude can be taken, as it were, as only one and are thus indifferently one, or many, or several; take, for example, a builder who constructs a house and uses up a number of saws successively in the process: a multitude of saws is not required for the construction of the house, except contingently by reason of the fact that no single saw can last forever. Nor does it make any difference in the construction how many saws are employed, wherefore no one of them has a dependence on any other, as was the case in the necessary multitude.[4]

We have here a double distinction: first, a distinction of actual and potential infinites, and then of necessary and contingent infinites (*infinitum per se, per accidens*). An actual infinite is had when something is simply without limits, like a line with no terminal points, or an unlimited multitude whose members are co-existent: its characteristic is an *esse totum simul*. A potential infinite, on the other hand, occurs only in instances of a succession; it consists in a repetitive process of some kind—generation, for example, or division of a whole—which does not come to an end. Its potentiality is grounded in the fact that each separate event, separately considered, could be initial or intermediate or final, or even unique; or it could be one in a series of similar events which is without beginning and without end. Characteristic of the potential infinite is its *esse unum post aliud*.

St. Thomas introduces his second distinction, that between the infinite as necessary and the infinite as contingent, with the remark that infinity, by its nature, is proper to the order of quantity (*infiniti ratio quantitati congruit*), an observation which he takes from Aristotle[5] and which recurs again and again in his treatment of the subject. He adds that quantity,

[4] *De Verit.*, q. 2, *a.* 11 c.; cf. *Quodl.* IX, q. 1 c.
[5] See, for example, *Physics* III, 6 (206a9 ff.).

primarily (*per prius*), is predicated of discrete, rather than of continuous, items. (Quantification, thus, will begin in a simple process of numbering, of taking things *unum post aliud*; its further elaboration in the measurement of continua will be achieved only through a real, or simulated, division of the latter into numerable parts.[6])

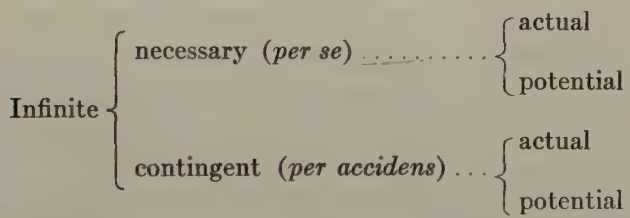
A discrete quantity, *multitudo*, can result either from some determinant which is intrinsic to it and which necessitates its being such, or it may occur as the effect of some contingency. As an example of a necessary *multitudo*, or plurality, Aquinas cites a series of causes and effects so interrelated that each one exhibits a dependence *sine qua non* on another, a dependence which is essential to the causal *esse* of the dependent: a stone is moved by a stick, which is moved by a pair of hands, which are moved by the neuro-muscular structure, which is energized by the Galenic *calor naturalis*, which is set in motion by the soul. If the stone is to move, all of these successively ordinated causes, in their plurality, must cooperate: it is not the case merely that certain causes are independently necessary; it is precisely the *multitudo causarum* that is required here. The necessity involved resides in the plurality as such: we have a *multitudo per se*. Obviously, a necessary infinite will be just such a *multitudo per se* which will lead back, however, not to some first thing (like the soul, in the present example), but which will regress endlessly through cause after cause. This necessary infinite, the infinite series of essentially subordinated causes, is a concept of the highest importance in the philosophy of St. Thomas (as it was also in the thought of Aristotle). The impossibility of its actual existence is crucial to the first two of the *quinque viae* by which he proves the Existence of God

[6] Quantity is said, *per prius*, of discrete quantities; infinity, however, is predicated primarily of magnitude (cf. *XI Metaphys.*, lect. 10). Actual quantity is the effect of an actuating form, and the individual quantity of each discrete material thing is the first formal effect of the information of prime matter, determining something to be *hoc individuum*. Infinity, on the other hand, is (as will be shown later) the result of a lack, or privation, of a formal determination in material things. Consequently, infinity will be said primarily of an unterminated, all-extensive magnitude, in potency to determination by some quantitative form.

in the first part of the *Summa*. We shall have to return to further consideration of it later.

A contingent plurality, *multitudo per accidens*, exists, Aquinas says, in those cases where the several items constituting the plurality are, effectively, the same as any one of them alone (*quasi loco unius ponantur*); he cites, as an example, a hypothetical case in which several, or many, saws are used in some piece of work because the saws, one after another, wear out. Clearly, such a plurality has no intrinsic necessity, it being a matter of utter indifference in the production of the effect (a house) whether one such tool be used, or many—or even (given the requisite time) an infinite number. This plurality arises, not from any necessity radicated in the effect or in the mode of its production, but from an accidental quality of the saws, that they are too brittle, for example, or are of faulty construction, etc.

We might schematize the twofold distinction of the infinite, presently under discussion, as follows:



Mindful that the infinite is proper to the order of quantity (*infiniti ratio quantitati congruit*), let us confine our attention, for the moment, to that order and inquire further into the various kinds of infinity, as diagrammed above. First, then, can there be an actual necessary infinite (*infinitum per se actu*)? This can only mean: Can there be a plurality which is an actual necessary infinite, there being, obviously, no infinite magnitude? St. Thomas, commenting on the twelfth book of Aristotle's *Metaphysics*, argues that there cannot:

> . . . if, of three things (a first, an intermediate, and a last), we must declare which one is the cause, we will, of necessity, say that the cause is the one that is first. We cannot say that that which is

last is the cause of the series . . . nor that which is intermediate. And lest anyone take the position that the intermediate never has following it any more than one thing, which one thing is the last (a situation which only comes about when, between two extremes, a single intermediate is given)—to meet such a position [Aristotle] maintains that it makes no difference whether there be only one intermediate or several: all must agree that several intermediates are effectively the same as one inasmuch as they all share the characteristic of being intermediate. Likewise, it makes no difference whether the intermediates be finite or infinite in number, because, precisely as intermediate, they cannot be the first moving cause. Now, inasmuch as, prior to every second moving cause, there is required a first moving cause, there must be, prior to every intermediate cause, a cause which is first and which is in nowise intermediate, as having other causes prior to itself. If, however, moving causes are posited as infinite in number, it follows that all the causes are intermediate. . . . So it must be that, if moving causes are posited as proceeding to infinity, no cause will be first: but the first cause was the cause of the whole series; it must follow, then, that there can be no causes here at all, for if a cause is removed, everything of which it is the cause is also removed.[7]

For a plurality to constitute an actual necessary infinite, its constituent individual members must coexist in an *esse totum simul*, and there must be some essential interdependence among them. Such interdependence implies, of necessity, causal relationship, since it involves an intrinsic need on the part of the dependent for an extrinsic principle to effect its reduction to act. (As an example of such a necessary infinite series, one might take a man standing aboard a ship which is supported by a sea which is held in position by the surrounding land which is held in place by the gravitational pull of the earth which results from the speed of rotation of the planet—and so on, *per impossible*, without end.) St. Thomas maintains, in the passage just cited, that such an actual and necessary infinite causal series cannot be. If there are only three things given, he says, a first, an intermediate and a last, we can only posit the first as the cause of the series, because, obviously enough, the last is not causal at all, and the intermediate, as intermediate, and there-

[7] *II Metaphys.*, lect. 3 a; cf. Aristotle, *Metaphysics* II, 9 (994a1-b 30).

fore secondary, cannot be the cause of the first. If a series is given with more than three constituent members, all save the first and the last will be intermediate and will, consequently, depend, together with the last, upon the first as upon the cause of the whole series. If the series is given as infinite, then all save the last are intermediate and secondary; there is no first cause, and the series remains unexplained: *sublata causa, tolluntur ea quorum est causa.* As Father Garrigou-Lagrange has written:

> It is contrary to reason to say that an actually existing motion can have *its sufficient reason, its actualizing raison d'etre, in a series of movers, each one of which is itself moved by some external cause.* If all the movers receive that impulse which they transmit, if there is not a prime mover which imparts movement without receiving it, then motion is out of the question, for it has no cause . . . To try to dispense with the necessity of a source is the same as saying that a watch can run without a spring, provided it has an infinite number of wheels . . .[8]

The impossibility of an infinite series of essentially subordinated causes is crucial, as was remarked above, in the first two "ways" by which St. Thomas proves the existence of God in his *Summa Theologiae.* Garrigou-Lagrange summarizes the *prima via* in the following propositions:

> That there is motion in the world is a certainty attested by experience. . . . Now, everything which is in motion is moved by another. . . . Moreover, there cannot be an infinite series of movers essentially and actually subordinated one to another. . . . We must, therefore, conclude that there is a prime mover, who is not himself set in motion by a mover of a higher order, and whom we call God.[9]

Clearly, the third proposition above is the crux of this argument: it is through it, so to speak, that one moves from the obvious fact of motion as proximately caused to the conclusion that there is a Prime Mover. This is a perfect dilemma, one

[8] *God: His Existence and His Nature,* transl. Dom Bede Rose, O. S. B. (St. Louis: Herder, 1934) I, 265. Italics in the original.

[9] *Ibid.,* 381-3.

horn of which is the affirmation of a First Uncaused Cause, the other the postulation of an endless series of intermediate causes which are not intermediate.

A plurality which would be an actual necessary infinite, therefore, cannot be. There is no infinite magnitude. Consequently, for St. Thomas, there is no actual necessary infinite in the quantitative, and hence in the material, order.

A potential necessary infinite, *qua* potential, would be a series characterized by an *esse unum post aliud* (*infinitum potentia semper in successione consistit*); *qua* necessary, it would involve the same intrinsic interdependence, the same causal relationship, among its constituent members, that we have just found to be impossible in examining the problem of a simultaneous infinite plurality. Consequently, there is no material infinite *per se potentia*, and so no necessary infinite of any kind, in the material universe.

The case is not the same with the quantitative contingent infinite (*infinitum per accidens*); St. Thomas considers the problem in the first part of the *Summa*:

> A contingent infinite multitude . . . is predicated when such an infinity of plurality is not necessitated but merely happens to be so. And this can be exemplified in the situation of a builder, where a certain plurality is required necessarily: for instance, that the virtue of art be in his soul, that his hands be moving, and that he have a hammer; and if this plurality were multiplied to infinity, the builder's work would never reach completion, because it would be dependent upon an infinite number of causes. But a plurality of hammers which comes about because each one breaks and is replaced by another is a contingent multitude; and it makes no difference whether the builder uses one hammer, or two, or many, or even an infinite number, provided he has an infinite time in which to work. In this way [certain men, like Ibn-Sina and Al-Ghazali] thought it possible for there to be an actual contingent infinite multitude. But this is not possible, because every multitude must fall under some species of multitude; but the species of multitude follow the species of numbers. No species of number, however, is infinite, because any number is a multitude measured by unity. Wherefore, it is impossible for there to be an actual infinite multitude, either contingently or necessarily. Again, any multitude existing in nature

is created, and every created thing is comprehended under some specific intention of its creator, for no agent acts without a purpose. It is, therefore, impossible for there to be an actual infinite multitude, even contingently.[10]

A contingent infinite, we are told, is an unterminated plurality which is not intrinsically necessitated, but simply happens to be such (*accidit ita esse*). An example is drawn from carpentry to distinguish sharply the necessary, from the contingent, infinite. The contingent infinite exemplified—an infinity of hammers successively used as one after another is broken—obviously does not involve the difficulty inherent in an infinite regress of subordinated causes: it does not involve any intrinsic contradiction. Such considerations, it seems, prompted some of the Islamic scholastics to affirm the possibility of an actual contingent infinite (*posuerunt quod possibile est esse actu multitudinem infinitam per accidens*). St. Thomas advances two arguments against this position.

He contends first that every multitude falls under some species of multitude, which species are ordinated according to the species of numbers (*species multitudinis sunt secundum species numerorum*). No species of number, however, can be infinite, for the reason that number is simply a multitude, or plurality, measured or divided by unity. Consequently, an actual infinite multitude is impossible, whether *per se* or *per accidens*. The case seems clear enough: as soon as a plurality is predicated as infinite in act, it is invested with an *esse totum simul*, but any such plurality can be comprehended under some specific numerical quantity and must, therefore, be limited. (It might, perhaps, be noted in passing that St. Thomas' argument is only against the possibility of an actual contingent infinite; it does not touch the example of the builder who uses, or uses up, an infinite number of hammers: such an infinity is not actual at all, but potential. As will be evident below, St. Thomas admits the possibility of the potential contingent infinite.)

[10] *Summa Theol.*, I, q. 7, a. 4 c.

The second argument brought against the possibility of an *infinitum per accidens actu* declares that every plurality is a creature (since multiplication of entities is one of the effects of matter, and every material entity as such must be a creature); every creature, however, is comprehended under some definite intention of its Creator: *non enim in vanum agens aliquod operatur*. An actually existing infinite, *totum simul*, would lack such determination or specification; it would be quantitatively formless, potential and unintelligible, and, consequently, it could not be the end or purpose of any creative act: *omne agens agit propter finem*.

In the *De Aeternitate Mundi contra Murmurantes*, we find what is, at first sight at least, a position which is the contradictory of this. In this *opusculum*, Saint Thomas is endeavoring to establish that the eternity of the world, as a mere philosophical possibility, would not be repugnant to reason; to this end he cites elaborate arguments brought forth by St. Augustine, St. Anselm, and other Christian theologians to refute the position that the world is *de facto* eternal. The fact that such elaboration of argument was felt to be necessary, Aquinas contends, is evidence that the eternity of the world is not simply repugnant to reason. Among these arguments of the theologians, he notes near the end of this short work, is one which denies the eternity of the world on the grounds that such eternity would involve an infinity of human souls in actual existence. This argument is not cogent, however, he continues, because the world might be eternal without the race's being so. "And besides," he goes on to say, pertinently to our present problem, "it has not been shown that God could not create actual infinites." (*Et praeterea adhuc non est demonstratum quod Deus non possit facere ut sint infinita actu.*)

There is, it would seem, no escaping the implied contradiction between this position and that set forth above. Perhaps, though, we may say that the present text, dealing *ex profcsso* with the Divine Omnipotence and only indirectly with the nature of infinity, cannot overthrow the doctrine of the *Summa*

Theologiae that every multitude falls under a species of number and is comprehended under a definite creative intention.

A similar argument obviates the possibility of an actual contingent infinite in the order of magnitude. St. Thomas considers this question also in the *Summa Theologiae*:

> It must be observed . . . that a body, which is a complete magnitude, can be considered in two ways: namely, mathematically as when only its quantity is regarded, and naturally as when its matter and form are taken into account. Now it is evident that a natural body cannot be actually infinite, because every natural body has some determinate substantial form; and, since accidents depend upon the substantial form, it must be the case that upon a determinate substantial form determinate accidents will be found to be dependent, and among them quantity. Therefore, every natural body has a determinate quantity . . . Consequently, it is impossible that any natural body be infinite. . . . The same is true of a mathematical body. If we should imagine an actually existing mathematical body, we should have to imagine it under some form, because nothing is in act except by virtue of its form. Now the form proper to continuous quantity as such is figure; such a body, therefore, would have to have some figure. Hence, it would be finite, for figure is given in its limits or boundaries.[11]

A natural body has a specific and determinate substantial form upon which all the accidental modifications of that body depend. St. Thomas argues that the accidents consequent upon such a determinate form must themselves be determinate and limited; among these accidents is quantity. Therefore, a natural body will have a determinate and finite quantity by reason of its determinate and finite substantial form. This argument might give us pause. If infinity is a *remotio finis,* a lack of determination and specificity, a privation rather than a perfection, then why could not a finite substantial form be infinite in quantity *per accidens,* that is simply privately or negatively? Why could it not simply lack any quantitative determination?

The answer, of course, is that the *remotio finis,* considered in itself, is indeed merely negative, but the effect of this negation is a positive increase *ad infinitum* in the quantity of matter

[11] *Ibid.*, a. 3 c.

united to a given form. Moreover, the *remotio finis* and the consequent quantitative infinity of the body flow from the substantial form as from their sufficient principle: the form, by its positive informing action, gives infinity to the matter; the form is, in a strict sense, a *principium infinitatis*. Consequently, it cannot be finite. (*Operatio sequitur esse, et modus operandi modum essendi.*) Every natural body, however, has a substantial form which is finite (otherwise, it would not be informing matter at all); therefore, no natural body can be infinite. There is no infinity, even contingently and potentially, in the order of physical magnitude.

Nor can a mathematical figure (*corpus mathematicum*) be infinite. Any figure we imagine (or conceive of—the *imaginemur* must not be taken too literally here) will have some form which is the *ratio* by which we are able to know it; in mathematical figures, such form is the shape (*figura*). Shape, however, is given in the limits, the contour (*termini, fines*) of the figure; the latter is, therefore, necessarily determinate and finite. There is, for St. Thomas, then, no infinite magnitude, actual or potential, necessary or contingent.

Arguments such as the foregoing, however, do not tell against a plurality which would be a potential contingent infinite (*infinitum per accidens potentia*). Since it has no *esse totum simul*, it does not fall under a species of number: " an infinity of multitude is not reduced to act all at once, but successively, because plurality can follow plurality to infinity." [12] Similarly, since its infinity is merely accidental or incidental, no problem arises, it would seem, by reason of its indetermination. St. Thomas can, therefore, write:

> . . . it is not deemed impossible to proceed to infinity merely contingently in a series of efficient causes, as, for example, where all the causes multiplied to infinity are effectively the same as one cause, their multiplication being contingent, as in the case of a

[12] ". . . infinitum multitudinis non reducitur in actum ut totum simul, sed successive, quia post quamlibet multitudinem potest sumi alia multitudo in infinitum." (*Ibid.*, a. 4, ad 1).

workman who, contingently, uses many hammers, because, one after another, they are broken. It is, therefore, purely accidental to this hammer that it is used subsequently to some other hammer. It is, in the same way, merely accidental to this man in generating that he was himself generated by another; he generates as man, not as the son of some other man. All men, as generating, are effectively the same as one particular generator in the order of efficient causes. Hence, it is not impossible for man to be generated by man unto infinity.[13]

The possibility of a potential contingent infinite (as has been noted already in passing) lies precisely in this that the constituent members of the infinite plurality are individually dispensable (*non tenent ordinem nisi unius causae*); there is no relation of necessity among them at all, nor is there any necessity even that they be a plurality. As far as any effect of the series is concerned, the individual causes antecedent to it might be indifferently one or several, few or many, finite or infinite in number. And the reason thereof is quite clear: none of the causes in this infinite series is dependent on a preceding cause for its causal *esse*. The preceding cause did, of course, effect the coming-to-be of the subsequent cause, as an extrinsic principle of action. But that action reached its term at the instant that the subsequent cause became an actual entity; thereafter, the subsequent cause, however much dependent on the preceding for its *fieri*, is quite independent of it in its *esse* and, consequently, in its *esse causa*: *operatio sequitur esse, et modus operandi modum essendi.*

St. Thomas concedes, then, the possibility of a contingent potential infinite in the order of quantity. (He does not, of course, admit the actual existence of such an infinite series; to do so would require the postulation of an eternity in which such a series might run and would, therefore, contradict the revealed doctrine of the creation of the world in finite time.[14] All that he argues is the objective possibility of an *infinitum per accidens potentia*: such a thing could have been, although in fact

[13] *Ibid.*, q. 46, a. 2, ad 7.

[14] Cf. *ibid.*, a. 2: "Utrum mundum incoepisse sit articulus fidei."

it is not; its non-existence does not flow from an intrinsic impossibility rooted in an essential contradiction, as is the case with the infinite series of essentially subordinated causes; rather, it is radicated in a free decision of the Divine Creative Will.)

It may be well briefly to recapitulate here what has been said of infinity in the order of quantity:

1. There cannot be an *actual necessary infinite*, because such a thing would have to be an infinite multitude, or plurality, which, *qua* necessary, would have to be an infinite series of essentially subordinated causes—a series which would lack any sufficient reason.
2. There cannot be a *potential necessary infinite*, because such would be, again, an infinite series of subordinated causes, existing *unum post aliud*, however, rather than *totum simul*; it would equally lack any sufficient reason for being.
3. There cannot be an *actual contingent infinite*, because every multitude falls under a determinate species of number and every magnitude has determinate quantity as a result of having a determinate actuating form.
4. Only the *potential contingent infinite* is possible in the order of quantity, in the material order. It would involve no intrinsic necessity, and hence no inner contradiction, in regressing *ad infinitum*; and it has no *esse totum simul* which would confine it to a specific number.

There can, then, be no material infinite which is either actual or necessary; only an infinite which is *both* contingent and potential (*infinitum per accidens potentia*) is objectively possible in the order of quantity and of matter.

Before quitting this discussion of material infinity, there is a passage of considerable length in St. Thomas' commentary on Aristotle's *Physics* which ought to be noted. The passage, which contains a comparison of infinity and perfection in the material order, reads, in part, as follows:

[Aristotle] says . . . that *infinite* ought to be defined otherwise than some have proposed. Some have maintained that the infinite is that outside of which there is nothing; it ought rather be said that the infinite is that of which something always remains over. . . . "That outside of which there is nothing" is the definition of the

perfect and the whole, which is demonstrated by the fact that a thing is defined as a whole when it is not lacking anything. . . . But the whole and the perfect are either fundamentally the same or closely similar in nature . . . wherefore it is clear that the perfect is that of which nothing lies outside. But nothing which is unbounded is perfect (because the boundary is the perfection of a thing). The boundary, however, is the limit of that of which it is the boundary; nothing unbounded (*infinitum*) or unlimited, therefore, is perfect. It follows that the definition of the perfect does not apply to the infinite, viz., " that outside of which there is nothing," . . . clearly, since it belongs to the whole to contain and to matter to be contained, the infinite of this [material] kind does not contain but is contained, insofar as whatever of the infinite is in act is always contained in something greater, because something can always be conceived as lying beyond it. From this, however, that it is like being in potency, not only does it follow that the infinite is contained and not containing, but two further conclusions follow also. Of these, the first is that the infinite of this kind is unknown, because it is like matter, lacking any species or form . . . ; matter, however, is known only through form. The other conclusion, which arises from the same premise, is that the infinite has rather the nature of a part than of a whole, because matter is related to a whole as part. Rightly, therefore, is the infinite taken as part, since only some part of it, which is in act, can be known.[15]

Here St. Thomas approvingly follows Aristotle in rejecting as a definition of the material infinite " that outside of which there is nothing " (*extra quod nihil est*). This definition, clearly intended to designate material infinity, since it involves the notion of parts, confounds the infinite with perfection and totality. That outside of which there is nothing is a totality, a whole, the latter being precisely that which is not deficient or lacking in anything properly intrinsic to it. Totality, therefore, is, or at least approximates, perfection. But a material thing which lacks a determination (*finis*) in quantity is, by that very fact, imperfect in its material nature, quantity being the first formal effect of matter. Consequently, infinity is not a perfection in material things, nor is it susceptible of being defined

[15] *In VIII Libros Physicorum Aristotelis*, III, 10; cf. *Summa Theol.*, I, q. 12, a. 1, ad 2.

as "that outside of which there is nothing." On the contrary, the material infinite is "that of which something always remains over" (*cuius est semper aliquid extra*). It is exactly this inexhaustibility, this continuing unbounded residuum, which, just because it has no term or limit, cannot be got through, that characterizes the very essence of the infinite in the order of quantity and matter.

Upon this definition of the infinite as "that of which something always remains over," there follows at once the fact that the material infinite is contained rather than containing; this, in turn, yields two further conclusions: (a) that a material infinite could not be known, because it is always incomplete and therefore in potency only, lacking the form needed to render it both existent and intelligible in act; and (b) that such an infinite, because it is actualizable only *unum post aliud*, has rather the nature of a part than of a whole or totality.

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In article two, question twenty-five of the first part of the *Summa*, "Whether the Power of God is infinite," the first objection is put as follows:

> Every . . . infinite is imperfect, according to the Philosopher in the third book of the *Physics*. But the Power of God is not imperfect. Therefore, it is not infinite.[16]

The objector formulates in his major premise the Greek cosmological concept of the infinite as the undetermined, the incomplete, the imperfect (the concept just noted above in the citation from St. Thomas' commentary on the *Physics*), and this he opposes to the Christian theological notion of infinity as absolute perfection. St. Thomas replies to the objection, as follows:

> It must be said that the Philosopher is speaking here of the infinite as found in matter unspecified by any form; such is the infinite

[16] Omne . . . infinitum est imperfectum, secundum Philosophum in III *Phys*. Sed potentia Dei non est imperfecta. Ergo non est infinita (*Summa Theol*., I, q. 25, a. 2).

which is proper to the order of quantity. The Divine Essence is not infinite in this manner, however, . . . nor, consequently, is the Divine Power. Whence it does not follow that the Divine Power would be imperfect.[17]

St. Thomas himself has said, as we saw before, that infinity, by its nature, is proper to the order of quantity (*infiniti ratio quantitati congruit*). And so, indeed, it is; it is to the quantitative, the extended or the multiple—to magnitude or multitude—that, in the first instance, we apply the notion of *finis*, of bounds or limits (the last point or line or plane, the last numbered item); it is in this order that, originally, we employ the notion of being-bounded (*finitum*) or of being-unbounded (*infinitum*). Equally evident is it that such an infinity is a mark of imperfection, simply because it is in potency to actualization under an accidental quantitative form—so much we have seen already. *Sic autem non est infinita divina essentia*: the Infinity of God is a Divine Perfection.

If the infinite in matter is a sign of potency and of imperfection, while the Divine Infinity is contrariwise a perfection, simply and absolutely, then, clearly, we have to do with an analogical predication. The intrinsic nature of being-infinite is simply different, according as the various kinds of infinite beings, actual or possible, are, *qua* beings, simply different. We have already encountered the analogical character of the predicate *infinite* in comparing magnitudes and multitudes: the same kind of infinity *simpliciter* cannot be predicated of an infinite body and of an infinite series. But here, in this objection and its reply, we have a much more profound differentiation, a much greater sweep of analogy, a distinction whereby infinity spells entitative perfection or imperfection, according as it is said of God or of material things. St. Thomas analyzes this analogy in the first part of the *Summa*:

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[17] Dicendum quod Philosophus loquitur de infinito quod est ex parte materiae non terminatae per formam, cuiusmodi est infinitum quod congruit quantitati. Sic autem non est infinita divina essentia . . . et per consequens nec eius potentia. Unde non sequitur quod sit imperfecta. (*Ibid.*, ad 1).

. . . a thing is said to be infinite by reason of the fact that it is not limited. Now, matter is limited in a certain way by form, and form by matter. Matter, indeed, is limited by form, inasmuch as matter, prior to receiving a form, is in potency to many forms; when, however, it receives a form, it is limited by it. Form, on the other hand, is limited by matter, since form, considered in itself, is common to many things; by the fact, however, of being received in matter, it becomes, determinately, the form of this thing. But matter is perfected by the form by which it is limited; and so the infinite, as attributed to matter, has the nature of an imperfection, for it is, so to speak, unformed matter. Form, however, is not perfected by matter; its amplitude is, rather, contracted by the matter; hence, the infinite, as related to form not determined by matter, has the character of a perfection.[18]

That is infinite which is not bounded (*infinitum dicitur aliquid ex eo quod non est finitum*). Consequently, the intrinsic character of infinity as such, and thereby the ontological value of being-infinite (*ens et bonum convertuntur*), will depend on the nature and the value of the entity of which it has to be predicated. If a being is essentially actual and, therefore, a perfection in itself, then to be infinite will be for it a further perfection—a crowning perfection, so to say—because such a being-infinite will mean this that no term or limit, no *finis*, is set to its entitative perfection: by reason of its infinity it will be a perfection simply and absolutely. On the other hand, in the case of a being which is essentially and by nature imperfect and potential, infinity spells the removal of any limit to such imperfection; the being is, as it were, irremediably confirmed in its essential lack of value; its purely passive capacity for becoming some value, howsoever slight, is unredeemed. There is in such an infinite thing no shadow of concretization, formalization, or value, only an unbounded inertness, one might say by way of figure, a gaping abyss of perfectibility in which no trace of actual perfection is to be found.

Finitur autem quodammodo et materia per formam et forma

[18] *Ibid.*, q. 7, a. 1 c. For the analogical application of this distinction in the order of intelligence, see *ibid.*, ad 2; q. 86, a. 3; I-II, q. 30, a. 4, ad. 2; *de Verit.*, q. 2, a. 2, ad 5.

per materiam: form and matter can limit each other (*quodammodo*, it is said, because the intrinsic nature of this reciprocal limitation is *simpliciter* different in either case). Matter, prior to its information, is in potency to many forms: it *is* actually nothing, potentially it *can be* anything material. Here is a true infinity, a *remotio finis*: there is no limit to what material determination unformed matter can have. This is, to be sure, no quantitative infinity, such as we were considering above; there is no question of number or shape, multitude or magnitude, at stake here; it is even irrelevant whether the number of forms to which matter is in potency be few or many, finite or infinite. This is a case of essential or quidditative infinity: in the nature of unformed matter, there is no limit to its capacity for material forms, however many, objectively, the latter may be. In other words, so destitute of the most elementary entitative perfection is such matter, that its openness to information is simply boundless. Matter without form has an essential infinity of imperfection; it is nothing, actually; it can become anything, without limitation, in the order of material things.

The case is just the contrary with form. Any form is an actuality and a principle of actuality. Those forms which are destined for union with matter (*formae receptae*), if they are considered in themselves, prescinding from their material correlative, are actualizing principles common to whole species; they are, as it were, full and unrestricted expressions of specific natures. They have, it is true, the capacity to inform any given quantum of matter; this, however, is not a potency in the form, but an aspect of its full actuality. So rich an expression of a determinate reality is the form, so pure is it as an exemplar of a specific nature, that it can communicate an existenial perfection to any unformed matter. The form is, therefore, a term and goal of that potency common to all matter into which it can be received: *forma communis ad multa*. Only when it has been received in matter, when its actualizing power is united with its correlative potency, is the form limited and bounded in its perfection: antecedently the full and true expression of a species as such, it becomes subsequently the form of this one

individual subsumed under that species; it is contracted from being or expressing a simple nature to actualizing an individual thing participating that nature: *forma . . . communis ad multa . . . per materiam . . . contrahitur.*

This being so, consider the character of those unreceived forms, perfect in themselves, not ordinated to the information of matter. Here is simple essential perfection, pure actuality, unreceived and, therefore, unbounded by any principle of potency extrinsic to them. Matter apart from form, pure matter, we found to be characterized by an infinity of imperfection, an infinite capacity with no shadow of realization. But these pure forms, being, each of them, a complete and unlimited expression, in existential act, of some possible nature, an utterance, so to say, of a Divine Idea, whole in the fulness of its truth, unlimited in any way in the plenitude of its specific perfection—these forms have an intrinsic infinity of actuality. They are radiant realizations of possible modes of reflecting the Divine Nature Itself—each one of them perfectly and completely imaging a perfection of God to such a decree of fulness and exhaustiveness that the same image could never be repeated.

Infinity is being-unlimited, and the intrinsic character of a mode of infinity is determined by what it is that has no limits. In matter, it is mere potency that is unlimited an infinity; in forms, it is actual being that has no term or bound: the former is an infinity of imperfection, the latter an infinity of perfection (*infinitum secundum quod attribuitur materiae habet rationem imperfecti; secundum quod se tenet ex parte formae habet rationem perfecti*).

Can we relate this quidditative infinity with the infinity in the order of quantity which we considered before? An actual quantity of any kind results from the actualization of a potency in a material thing by an accidental quantitative form. Quantitative infinity, then, must be either formal or material in essence. It is the infinity of pure matter, the infinity of imperfection, which underlies the potential contingent infinite—the infinite process of generation, for example, or the infinite series of divisions in a continuum: these are consequences of

the potency to many forms inherent in matter. Therein lies the fundamental reason why such non-actual, non-necessary infinite series are held not to be intrinsically impossible. On the other hand, where the possibility of an infinite which is actual or necessary in the material order is denied, the denial strikes at the possibility of a formal quantitative infinity, because the principle of actuality or of necessity could only be the form, never the matter. The function of a quantitative form is precisely to determine the potency of matter to be a specific shape or number; to postulate a quantitative form which would actualize an unlimited multitude or an unbounded magnitude is to affirm a contradiction. St. Thomas calls attention to the ontological basis of material infinity in several places:

> . . . the infinite which is proper to the order of quantity is on the part of matter. By division of a whole, we approach to matter, for parts arise from the nature of matter; by addition, however, we approach the whole, which has the character of form. And for this reason, the infinite is not found in the addition of magnitudes, but in division only.[19]

> . . . as the infinite is found in potency in the division of a continuum, because it is in the direction of the matter . . . so likewise is the infinite found in potency in the addition of a multitude, for the same reason.[20]

Only that infinity which is rooted in the formal indifference of prime matter (*potentia ad multas formas*) is intrinsically possible in the universe of material things.

Let us return to the consideration of infinity *ex parte formae*. St. Thomas concludes the passage on the analogical character of material and formal infinity, quoted above,[21] as follows:

> That . . . which, of all things, is most formal is being itself . . . Since, therefore, the Divine Being is not received in anything, but

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[19] *Summa Theol.*, I, q. 7, a. 3, ad 3.

[20] ". . . sicut infinitum invenitur in potentia in divisione continui, quia proceditur ad materiam . . . eadem ratione etiam infinitum invenitur in potentia in additione multitudinis" (*Ibid.*, a. 4 c.; see also a. 2, ad 3).

[21] *Supra*, footnote 18.

He is His own subsistent Being . . . it is evident that God Himself is Infinite and Perfect.[22]

The infinity of form is an infinity of perfection, because it is an unboundedness of actual being. If this be true of forms in general, it is *a fortiori* the case with that most formal of all entities, that *Ipsum Esse*, with Him Who commanded that He be identified as *Yahweh*: *Est qui est*. God's Actuality is utterly unreceived: not only is there no composition with matter in His Divine Nature, there is no composition, either, of essence with existence. His Essence is His Existence, or rather He is His own Being. If there is no aspect of reception into a limiting potency of any kind discernible in God's Being, then, indeed, His Existence is a pure infinity of actuality. He is His own limitless, unfathomable act of Existence, and He is likewise, simple, absolute Perfection.

From this simple and perfect Infinity of God flows the necessity of His Unicity:

. . . God comprises, in Himself, the whole perfection of being. Were there, then, several gods, they would have to differ among themselves. Something, therefore, would be proper to one and not to another. Thus, that one in whom the privation was found, would not be simply perfect; were this itself a perfection, then it would be lacking to some other of them. Consequently, it is impossible that there should be several gods. Wherefore, the ancient philosophers, as if compelled by truth itself, when they posited an infinite principle, posited only one such principle.[23]

There is a subtle psychological block to a clear and compelling vision of formal unicity, be it the essential unicity of the angelic species or the absolute Existential Unicity of God Himself, which has its source in the connatural ordination of the human intellect to material natures multiplied within the same species. We are too accustomed to seeing the same nature repeated and too apt to forget that it is matter which accounts for this situation.

[22] Illud . . . quod est maxime formale omnium est ipsum esse . . . Cum igitur esse divinum non sit esse receptum in aliquo, sed ipse sit suum esse subsistens . . . manifestum est quod ipse Deus sit infinitus et perfectus (*Summa Theol.*, I, q. 7, a. 1 c).

[23] *Ibid.*, q. 11, a. 3 c.

Two separate forms, however, can only differ in a formal manner. If they are not to be *unum idemque*, there must be in one form some quality not to be found in the other. If, *per impossibile*, one were to imagine two gods, they would, to be different deities, have to be distinguished by this that one had a formal quality and perfection not to be found in the other. But this immediately vitiates the possibility that the supposed being characterized by the lack, privative or negative, could be divine, inasmuch as such a privation *per se* argues a limitation intrinsic to that being's nature and an essential composition which must deprive it of that simple and unbounded act of existence which is God. (Such a composition, also, would demand a *ratio essendi* extrinsic to the being itself, which would, at once, mark it as a creature.) God's Infinity, as such, is the ground of His Divine Uniqueness.

A necessary consequence of this fact is that there will be no simple and absolute infinity outside of God: only God Himself could be His own Infinity, just as God Himself is His own unique Existence.

. . . a thing other than God may be infinite relatively, but not absolutely. Thus, if we consider the infinite as it pertains to matter, it is clear that every existing thing has some form, and the matter is determined by that form. Since, however, the matter, according as it is under some one substantial form, still stands in potency to many accidental forms, that which is simply finite can be relatively infinite; thus, wood is finite from the standpoint of its substantial form, but it is, nonetheless, infinite, relatively speaking, since it is in potency to an unlimited number of shapes. Now, if we consider the infinite as it pertains to form, it is quite evident that those things, the forms of which are in matter, are simply finite and in no way infinite. But if there are some created forms, not received in matter but self-subsisting, as some hold with regard to the angels, then such forms will be relatively infinite, inasmuch as they are not terminated or contracted by matter. Since, however, a created form thus subsisting *has* existence, and *is not* its own existence, it follows that its act of existence is received and contracted to a determinate nature. Hence, it cannot be simply infinite.[24]

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[24] *Ibid.*, q. 7, a. 2 c.

God is infinite absolutely; any other infinite can only be such relatively. Everything existing outside of God has an intrinsic composition in its being, whether of essence-existence and matter-form, or of essence-existence only. Entitative composition is, in either case, the limitation of an active formal principle by a receptive potency: such limitation removes the possibility of simple infinity. Thus every material form is contracted to this individual thing, leaving only the inert and imperfect infinity of matter *ad multas formas*. So also, the intrinsically unlimited perfection of the separate angelic form, within its essential order, is terminated in the fact that such formal infinity does not necessitate the angel to be *per se*. God alone is simply and utterly infinite; other beings, His creatures, may be relative infinites—either potentially and contingently, as matter could be, or actually and *per se*, as are the angelic spirits.

God's simple and uniquely Infinite Being is, of course, the ground (or, more precisely, it is identical with) His infinite Active Power: *secundum hoc potentia activa invenitur in Deo, secundum quod ipse actu est.*[25] An interesting observation on the Infinite Divine Power is made by St. Thomas in replying to an objection that God creates no infinites:

> . . . the power of a univocal agent is completely manifested in its effect; thus, the generative power in man can only produce another man. But the power of an agent which is not univocal is not completely manifested in the production of its effect; the power of the sun, for example, is not completely manifested in the production of some animal generated by putrefaction. God is clearly not a univocal agent, for nothing else agrees with Him, either in species or in genus. . . . Whence it follows that the effect produced is always less than God's Power. But it is not necessary that the Infinite Power of God be manifested in His producing an infinite effect. Indeed, even were He to produce no effect at all, God's Power would not be in vain; and the reason is that what is vain is what is ordinated to an end which it does not attain; God's Power, however, is not ordinated to its effect as to its end, rather the Power is the end of the effect.[26]

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[25] *Ibid.*, q. 25, a. 2 c.
[26] *Ibid.*, ad 2.

Operatio sequitur esse: as God is His Nature and His Existence, so is He His unreceived, and consequently unlimited, Divine Power. But God is not a univocal agent; the term of His Action is not the production of another Being.[27] The reason why God's creative Power is not univocal is simply that, as has been argued just above, there cannot be two simple infinite beings *per se*. Consequently, His Power can never be equalled by its effect. It is, therefore, no valid objection to the thesis that God's Power is infinite that He creates no infinite effects. Nor could the Infinity of His Power be called in question, or held to be in vain, were It to have produced no effect at all. God's Active Power, unlike all created power, is not ordinated to any end beyond Itself, as to Its *ratio*; it is rather the case that the Divine Power, Which is one with God's Being, is the end and the reason of every effect of His Action.

As God's Being and Power are infinite, so is His Divine Knowledge, in which he apprehends Himself. St. Thomas writes in the *De Veritate*:

> . . . God knows and understands and comprehends Himself, although, simply speaking, He is infinite. For God is not infinite privatively, like the infinite which is proper to the order of quantity and which has part beyond part unto infinity. In such a case, the infinite, if it had to be apprehended precisely as it was infinite, so that part was known after part, simply could not be grasped: there would never be an end to the process of knowing. God, however, is said to be infinite negatively, by reason of the fact that His Essence is not limited by anything. Every form received in something is limited according to the mode of the thing receiving it; wherefore, since the Divine Existence is not received in anything, because He is His own Existence, that Existence is not finite; and for the same reason, God's Essence is infinite. . . . Since God's cognitive Power is infinite in the same manner as is the Divine Essence, His Knowledge is equal to his Essence, and so He attains to a perfect knowledge of Himself. For this reason is God said to comprehend Himself: not that there is any limit to what is known in comprehend-

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[27] We are speaking exclusively here of the Divine Operations *ad extra*; the possible bearing of the question of univocal agency on God's Operations *ad intra* exceeds the abilities of the present writer.

ing, but because of the perfection of that Knowledge, to which nothing is wanting.[28]

God's Knowledge, being identical with His Being, is completely unreceived, and therefore unlimited and infinite. What is more (and this, at first sight, presents a problem, at least terminologically) God's Knowledge comprises (*comprehendit, cum, prehendere*: takes in, encompasses) His Infinite Being. Comprehensive, or exhaustive, knowledge, by a created intellect, necessarily indicates an intrinsic finiteness in the object of such knowledge; the fact that such a thing can be got through, can be encompassed, in a cognitive act, indicates its essential limitation in being. On the other hand, a material infinite, an infinity of part after part, could never be comprehended, *secundum rationem suae infinitatis*, simply because there is no end or term to the parts (*infinitum est cuius est semper aliquid extra*). In God's Knowledge of Himself, however, where there is, of course, no extension, and where both Knowledge and Known are infinite (and, indeed, identical), the *comprehensio* involved does not argue any limitation in What is known, but only a perfect understanding, *cui nihil deest*—an adequation, as St. Thomas explains elsewhere:

> Transition implies a certain succession of parts; consequently, the infinite cannot be traversed, by anything finite or infinite. Adequation, however, suffices to the ends of comprehension, for that is said to be comprehended, no part of which is outside of the one comprehending. It is not, therefore, contrary to the nature of the infinite that it should be comprehended by an infinite. And so what is, in itself, infinite can be said to be finite to God's Knowledge, as comprehended, not however as traversable.[29]

God alone is infinite in Being and Power and Knowledge—indeed, in all of His Divine Attributes, for the reason that He is His Being, and all of His Attributes, distinguishable *quoad nos*, are *per se* identical with His Being, which is, uniquely, *Infinitum simpliciter*. Other beings, however, can be infinite *secun-*

[28] *De Verit.*, q. 2, a. 2, ad 5; on God's Knowledge of infinites outside Himself, see *Summa Theol.*, I, q. 14, a. 12.

[29] *Summa Theol.*, I, q. 14, a. 12, ad 2.

dum quid—relatively, as we saw above. In a passage parallel to that in which the distinction between absolute and relative infinity was made, St. Thomas says:

> Every creature is finite, simply speaking, inasmuch as its act of existence is not absolutely subsistent but is terminated in some nature to which it is communicated. Nothing, however, prevents some creature from being infinite relatively. Material creatures have an infinity on the side of the matter, but they are finite on the part of the form, which is limited by the matter in which it is received. But created immaterial substances are finite according to their act of existence, but infinite in that their forms are not received in anything. Thus, we might speak of whiteness, existing separately, as infinite precisely as white, because it would not be contracted to any subject; its act of existence, however, would be finite, because it would be determined to a certain specific nature.[30]

The finiteness of the creature is the mark of non-necessity: be its essence ever so exalted, and its essential perfection completely unbounded, that essence does not necessitate the creature's existence. Actual existence is a further perfection, extrinsic to, and limited, by the essence. Infinite in its proper essential order a creature may be; it will, nonetheless, be finite in the act of existence received into (as into a potency), and bounded by, that essence. Such are the angelic forms, infinite in their unreceived and therefore unlimited essences—perfect intellectual natures, without blemish or bound; finite in their received and bounded acts of existence.

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In conclusion, we may resurvey briefly the concept of the infinite as we have found it in the philosophy of St. Thomas Aquinas. The infinite is that which is not limited, not finite. A necessary infinite is a being which is necessarily determined to be unlimited in some perfection by its formal nature. God, the unique Absolute Infinite, is the perfect example of such a necessary infinite. Examples of relative necessary infinites are, in the immaterial order, the separate angelic forms, and, in the

[30] *Ibid.*, q. 50, a. 2, ad 4.

material order, the impossible infinite series of subordinated causes. An actual necessary infinite is a necessary infinite in *esse totum simul* (such is God, an actual angel, or, *per impossible*, an infinite series of subordinated and coexistent causes). A potential necessary infinite is an infinity radicated in the potentiality of matter to many forms, since it involves an *esse unum post aliud*; an example would be any successive series *ad infinitum*.

The contingent infinite is also radicated in potency, a fact evidenced by its intrinsic accidental character. In the material order, an actual contingent infinite would be an actual infinite magnitude or multitude. A potential contingent infinite would be a non-necessary, non-simultaneous series of material beings.

GEORGE F. J. LAMOUNTAIN

Aquinas College,
Grand Rapids, Michigan

RATIO INFERIOR AND *RATIO SUPERIOR* IN ST. ALBERT AND ST. THOMAS

THE history of philosophy in the thirteenth century is in part the history of a gigantic effort of constructive assimilation. Yet the great geniuses of this period made the assimilation with such tranquil assurance that unless one is familiar with the sources of their writings and the often vastly different ideas which these men reconciled, the magnitude of their accomplishment can neither be adequately understood nor fully appreciated.

A case which well illustrates the mediaeval achievement of assimilating the wisdom of the past is the history of the theory of *ratio inferior* and *ratio superior*—a theory which M. D. Chenu, O. P., considers to have been " one of the pillars of the noetic common to all the masters of the thirteenth century. . . ." [1] Derived ostensibly by the mediaevals from the *De Trinitate* of St. Augustine, the theory seems to have had a much older and much more complicated history. St. Augustine's own source was very likely the *Enneads* of Plotinus; and from this one source of the *Enneads* at least two lines of tradition can be projected: one passing through the *De Trinitate* of St. Augustine and the Augustinian schools of the early middle ages; another passing through the neo-Platonic Arabian schools represented by the *Theologia* of pseudo-Aristotle, the *De anima* of Avicenna, and the *Liber philosophiae* of Algazel. Both lines converged momentarily but significantly—before continuing their separate paths to the intellectual centers of mediaeval France,—in the writings of the eminent translator of Toledo,

[1] M. D. Chenu, O. P., "*Ratio superior et inferior*: un cas de philosophie chrétienne," *Laval théologique et philosophique*, I (1945), 121: "En vérité, nous sommes là devant l'un des piliers de la noétique commune à tous les maîtres du XIII[e] siècle. . . ."

Dominicus Gundissalinus, whose own writings include a modified version of the Arabian theory of *duae facies animae* in terms that clearly echo the teaching of St. Augustine on *ratio superior* and *ratio inferior*.[2]

In the twelfth and early thirteenth centuries, morever, the theory was freighted with such extrinsic problems as that of *delectatio morosa* by Peter Lombard and that of *synderesis* by William of Auxerre and Richard Fishacre until it almost entirely lost its original meaning.[3] The purpose of the present essay is to trace its subsequent history in the works of St. Albert the Great and St. Thomas Aquinas. After briefly reviewing the theory as it is found in the writings of St. Augustine, we will follow its development in the works of St. Albert and then its evolution and ultimate assimilation in the writings of St. Thomas Aquinas.

II

The human mind, St. Augustine writes in the *De Trinitate*,[4] has two principal functions: it contemplates the eternal reasons —the universal natures that give meaning to experience—and it guides man through the vicissitudes of life. Consequently, it may be said to have two parts, a higher part whose object is the eternal reasons, and a lower part whose object is corporeal things.[5] These " parts " are not to be understood in a material

[2] Cf. Dominicus Gundissalinus, *De immortalitate animae*, edited by Georg Bülow, *Beiträge zur Geschichte der Philosophie des Mittelalters*, Band II, Heft III (1897), p. 19: Manifestum est virtutem istam nobilem aut esse duarum facierum, quarum altera illuminabilis est desuper, a rebus scilicet nobilibus, incorporalibus, scilicet spoliatis a materia et ab appendiciis ipsius, altera illuminabilis a parte inferiori, videlicet corporalium et sensibilium; aut eadem est virtus et eadem facies, sed liberum habens vertere se in quam partem voluerit. . . . St. Augustine uses the term *facies* to describe the upper part of the reason in *De diversis quaestionibus LXXXIII*, xlvi (*PL* 40: 30) and in his *De Trinitate*, XV, 7 (*PL* 42: 1065).

[3] For a fuller treatment of the history of this theory, see author's " *Ratio Superior* and *Ratio Inferior*: The Historical Background," *The New Scholasticism*, XXIX (1955), 1-32.

[4] St. Augustine, *De Trinitate*, XII, 3 (*PL* 42: 999).

[5] It seems that St. Augustine never used the precise terms *ratio inferior* and *ratio superior*. This terminology was introduced later. Ordinarily he simply refers to the two parts of the mind or of the reason, e. g., *Ibid.* XII, 7 (*PL* 42: 1003); *ibid.*, XII, 12 (*PL* 42: 1007).

sense, as though they were actual divisions of the mind.[6] The mind simply has two distinct functions; and so closely integrated are these two functions that any universal, necessary judgment we make about any corporeal reality is the result of their cooperation, i. e., of the lower part of the mind presenting data to the upper part, which then judges the data according to the eternal norms that are its own proper object.[7]

The lower part of the mind or reason, he continues, is engaged in action, which is necessarily singular, and there is always present a distinct danger that it fall victim to the appetite unless it constantly follow the norms presented to it by the upper part of the reason.[8] This duality in the human reason suggests to him the duality in the human race: man, the head of the family and the source of the general principles that are to orientate its life, and woman, engaged in the practical details of daily life, intent upon immediate objectives, but prone to lose sight of the universal significance of action unless properly guided.[9] However, when the lower part of the reason submits to the rule and wisdom of the upper part, then the entire reason becomes a living image of God. The lower part of the reason acquires the virtue of prudence, which St. Augustine calls science, and the higher part of the reason, transformed by its contemplation of the eternal reasons, acquires the virtue of wisdom, the habitual knowledge of " those things which neither have been nor will be, but are. . . ." [10]

[6] *Ibid.*, XII, 4 (*PL* 42: 1000): Cum igitur disserimus de natura mentis humanae, de una quadem re disserimus, nec eam in haec duo quae commemoravi, nisi per officia geminamus.

[7] *Ibid.*, XII, 2 (*PL* 42: 999): Judicamus autem de corporalibus ex ratione dimensionum atque figurarum, quam incommutabiliter manere mens novit.

[8] *Ibid.*, XII, 7 (*PL* 42: 1004).

[9] An interesting parallel is to be found in the writings of Freud: " This passage from the mother to the father . . . marks a victory of spirituality over sensuality, and consequently a progress in civilization," *Gesammelte Werke*, XIV, p. 221, cited by L. Beirnaert in his review of M. Choisy's *Le scandale de l'amour*, *Etudes*, CCLXXXI (1954), 412. (Translation ours). Beirnaert himself, *loc. cit.*, writes as follows concerning the role of man and woman in marriage: " Le premier pour l'universaliser et en faire un facteur de civilisation; la seconde pour lui donner son poids de matière et sa palpitation cosmique."

[10] *De Trinitate*, XII, 14 (*PL* 42: 1010): Ea quae nec fuerunt, nec futura sunt, sed sunt. . . .

When Peter Lombard came to treat sensuality in his *Sentences*, he seized upon the texts of St. Augustine cited above.[11] While mentioning only briefly the contemplative function of the upper part of the reason, he suggested that when the sacred scriptures speak of sensuality what is often signified is the lower part of man's reason. Again, when the problem of *synderesis* arose,[12] mediaeval writers such as William of Auxerre [13] and Richard Fishacre [14] identified *synderesis* with the higher part of man's reason. The strange but brilliant genius, John of La Rochelle, even fused the Augustinian theory of the higher and lower powers of reason with the Avicennan doctrine of the two visaged soul (*duplex facies animae*): the upper visage of the soul is turned towards the First Truth, the lower visage, towards the objects of the senses.[15]

These were merely some of the teachings into which St. Augustine's original theory had been incorporated by the middle of the thirteenth century when St. Albert the Great and St. Thomas Aquinas began to teach and write.

[11] Peter Lombard, *Libri IV Sententiarum*, II, d. 24, c. 5 (Quaracchi edition: I, 422).

[12] The problem of *synderesis* seems to have arisen from an error made by a mediaeval copyist when transcribing St. Jerome's commentary on the *Book of Ezechiel*. For a full account, see J. De Blic, S. J., "Syndérèse ou conscience?" *Revue d'ascétique et de mystique*, XXV (1949), 146-157.

[13] William of Auxerre, *Summa aurea*: Nobis videtur sine praeiudicio quod sinderesis est superior pars rationis et ipsa aliquando peccat. . . . Cum enim ratio inferior per errorem decipitur, si sinderesis consulat primam formam, statim corrigit inferiorem partem rationis. Cited by O. Lottin, O. S. B., *Psychologie et morale aux xii^e et xiii^e siècles*, tome 2 (part 1), (Gembloux, 1942), p. 125, f. n. 1.

[14] Richard Fishacre, *In II Sent.*, d. 24: Dico ergo quod sinderesis est anima vel mentis aspectus intuens regulas veritatis in Deo. . . . Igitur in nostro superiori rationis sunt duo, scilicet sinderesis et conscientia. . . . Cited by O. Lottin, O. S. B., *ibid.*, p. 303. The dispute over whether or not *synderesis* was distinct from the upper part of the reason or identical with it seems to have been the origin of the later disputes over the nature of *synderesis*, i. e., is it a power or a habit? See St. Thomas, *De Veritate*, q. 16, a. 1.

[15] John of La Rochelle, *Summa de anima*, I, 43: [Solvuntur obiectiones contra immortalitatem] distinguendo faciem virtutis intellectivae duplicem, scl., inferiorem et superiorem, inferiorem quae illuminatur et perficitur per comparationem ad sensibilia. . . . [Superior] illuminatur a prima veritate. Cited by J. Rohmer, "Sur la doctrine franciscaine des deux faces de l'âme," *Archives d'histoire doctrinale et littéraire du moyen age*, II (1927), 74.

III

Although the dates of all of St. Albert's writings have not been determined with any great accuracy, it is generally agreed that his *Summa de creaturis* was written around the years 1240-1243, his commentary on the *Sentences* seems to have taken final form between 1244 and 1249, his *De anima* belongs to his " Aristotelian " period (1254-1270), and his *Summa theologiae*, never completed, occupied the last ten years of his life, 1270-1280.[16] Since it is in these works that the most important texts on *ratio superior* and *ratio inferior* occur, the dates, general as they are, will help us to study St. Albert's theory as it developed.

The *Summa de creaturis*, probably a compilation of questions given by St. Albert when he was a master of theology in Paris,[17] contains a very interesting treatment of the two parts of the human reason—which, incidentally, St. Albert usually designates as *portio superior* and *portio inferior*. The two " portions " of reason, St. Albert teaches here in this early work, are simply terms used to describe two habits of the practical reason: the term *portio superior* signifies the habit of wisdom, which aids a man to act in conformity with the divine law, the term *portio inferior* signifies the habit of science, which aids a man to act in conformity with human law.[18] It is for this reason, he adds, that St. Augustine spoke of the lower part of the reason as symbolizing woman and of the higher part as symbolizing man; for the higher part of the reason has for its object the unchangeable, certain principles of divine law, whereas the lower part has for its object merely human positive law, which changes as times change. Now, because of the superior qualities of divine law, it is naturally the norm and the guide of human positive law, just as man, because of his superior quali-

[16] F. Van Steenberghen, "Les grandes synthèses doctrinales de 1250 à 1277," *Le mouvement doctrinal du ix^e au xiv^e siècle*, chapter 4, book 2, pp. 237-38. Vol. XIII of *Histoire de l'Eglise*, directed by A. Fliche and V. Martin (Paris, 1951).

[17] O. Lottin, O. S. B., " Problèmes concernant la *Summa de creaturis*," *Recherches de théologie ancienne et médiévale*, XVII (1950), 328.

[18] St. Albert, *Summa de creaturis*, I, tr. 4, q. 69, a. 3, p. 3 (Borgnet edition: XXXIV, 703).

ties, is the natural guide for woman. Yet, St. Albert adds, when reason is transformed by grace, its parts are no longer merely a symbol of man and woman; they are instead, a single image of God Himself.[19]

The most striking feature of St. Albert's treatment of the theory in the *Summa de creaturis* is that he considers the lower and higher parts of reason exclusively in their practical functions. The virtue of wisdom, proper to the higher part of reason, is a practical virtue: "Wisdom as taken here means knowledge of divine justice, which persuades men to dispose even temporal things according to divine, eternal reasons."[20] No mention is made of the speculative function of the higher part of reason. And yet, strangely enough—especially in view of the close association which had been made by many of his contemporaries between the higher part of reason and *synderesis*—when he comes to treat *synderesis* in the present work, he mentions the *portio superior* only in passing.[21] In the question concerning conscience, neither *portio* is mentioned at all.[22]

In his commentary on the *Sentences* of Peter Lombard, written several years later, St. Albert is even more explicit in his interpretation of St. Augustine's theory as being one concerned only with practical activity:

> I say, without prejudice, that it seems to me that we must concede that when St. Augustine divides the reason here he is simply speaking of the whole which perfects the movement of the rational part of the soul—the movement of the practical reason and the appetite of the will, but primarily that of the practical reason. . . .[23]

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[19] *Ibid.*

[20] *Ibid.*, "ad id quod obiicitur de muliere," (Borgnet edition: XXXIV, 703): Dicitur hic sapientia cognitio iustitiae divinae, quae per rationes divinas et aeternas suadet etiam temporalia disponere.

[21] *Ibid.*, II, q. 71, a. 1 (Borgnet edition: XXXV, 893).

[22] *Ibid.*, II, q. 70, aa. 1-3. (Borgnet edition: XXXV, 590 seq.).

[23] *In II Sent.*, d. 24, F, a. 10, sol. (Borgnet edition: XXVII, 408): Sine praeiudicio videtur mihi esse concedendum quod ratio quae hic dividitur ab Augustino dicit totum quo perficitur motus ex parte animae rationalis secundum rationem practicam et appetitum voluntatis, sed tamen principaliter quoad rationem practicam. . . .

It is difficult to determine what actually brought St. Albert to take this position whereby he practically ignored the speculative aspect of St. Augustine's original theory. The most plausible reason seems to be that he was influenced by his contemporaries who ordinarily treated the higher part of reason only in its relation with *synderesis*.

When St. Albert comes to treat *synderesis* and conscience in the present work, he departs considerably from the lines he had laid down previously in the *Summa de creaturis*. Whereas he had made little or no use of the higher or lower reason in these questions in the *Summa de creaturis*, he now uses the higher reason somewhat as Aristotle had used the particular reason. Both the higher part of reason and *synderesis* are related to the divine law, he writes, but *synderesis*, a " special power," has for its object the knowledge of universal principles of morality, whereas the higher part of reason has for its object simply the knowledge of how these universal principles should be applied to particular cases. Erroneous judgments of conscience arise when the higher part of reason applies the general rules of morality incorrectly because of its own fallibility or because the case in question is extremely complicated and thus difficult to solve.[24] The lower part of reason is simply a term used to designate the reason together with a special habit formed by the knowedge of the intrinsic goodness or evil of an act, as well as by the knowledge of the relation of that act to the common good of the state.[25] These are the only sections in this work where he speaks of the lower and higher parts of reason at any length, and no indication is given of the principles which made him modify his earlier teaching.

In the third work in which there is to be found discussion of the two parts of reason, the *De anima*, written, it seems between 1254 and 1270, St. Albert takes a position quite similar to that taken in the *Summa de creaturis*. He now holds that

[24] *Ibid.*, d. 24, F, a. 14, sol. (Borgnet edition: XXVII, 414).

[25] *Ibid.*, d. 24, L, a. 16, sol. (Borgnet edition: XXVII, 421): Ipsa est operans circa particularia sensibilia . . . licet disponat ea secundum rationes non sensibiles sed abstractas, quae sunt rationes honesti et boni civilis.

there are three types of habitual knowledge orientated towards action, namely, *synderesis*, *portio superior*, and *portio inferior*. *Synderesis* is the dynamic possession of such general principles of morality as "It is wrong to steal," and "I must not do to another what I would not have him do to me." *Portio superior* is a term that describes man's reason as charged or informed with knowledge of the divine law, a knowledge which enables man to apply with ease and assurance the principles of divine justice to his daily life. *Portio inferior* designates the reason when it possesses a thorough knowledge of the principles of human positive law that are sanctioned and enforced by the weight of custom—a knowledge that is essential to the formation of a good citizen.[26]

The theory as found in the *De anima*, described above, was altered only slightly in the *Summa theologiae*, a work which St. Albert never lived to finish. The changes, however, are interesting and significant. First of all, he no longer insists upon the exclusive practical function of the virtues of wisdom and science described by St. Augustine as the virtues proper to the higher and lower parts of the reason. He now admits that the *portio superior* plays a role in the life of contemplation,[27] and its wisdom is both speculative and practical.[28] The science characteristic of the *portio inferior* has a mixed nature too, but, as he points out correctly, the science which St. Augustine speaks of as being the virtue proper to the lower part of reason is totally different from the kind of science described by Aristotle. Sci-

[26] *De anima*, III, tr. 4, c. 10 (Borgnet edition: V, 409).

[27] *Summa theologiae*, II, tr. 15, q. 93, m. 3, sol. (Borgnet edition: XXXIII, 204): Dicendum ergo est, quod portio superior dicitur propter officium illa pars mentis superior, quae extenditur ad contemplandum Deum, et rationes iustitiae divinae quibus homo regitur secundum totum ordinem vitae suae ad formam iustitiae divinae. Et ideo dicit Augustinus quod contemplandis et consulendis rationibus aeternis inhaerescit. Hoc enim est officium superioris partis mentis in qua impressa est homini imago creationis, signata lumine vultus Dei per exemplum iustitiae aeternae, quae est lumen sapientiae divinae.

[28] *Ibid.*, ad 3 (Borgnet edition: XXXIII, 204): Superior portio deputatur sapientiae secundum quod sapientia dicitur scientia per altissimas causas. . . . Scientia vero dicitur habitus intellectualis acceptus per causam et medium naturae inferioris. Et ideo licet utraque sit virtus intellectualis, non tamen eodem modo, nec per idem medium accepta. . . .

ence as conceived by Aristotle consists in the habitual knowledge of conclusions drawn from first principles, whereas the science spoken of by St. Augustine consists primarily in the knowledge of human law, which is subject to change, involves individual cases, and cannot be reduced to any uniform rule from which deductions can be made—a technique essential to the Aristotelian notion of science.[29]

Secondly, when St. Albert discusses *synderesis* and conscience in this work, he does not assign to the *portio superior* the important role it had in the *De anima*. Moreover, the *portio inferior* begins to look suspiciously like the particular reason of Aristotle, whose function is to apply the general rules of conduct to particular cases. He writes,

> *Synderesis* . . . has two relations. It is related to what is above it and to what is below it. Ruled by what is above it, it rules what is below it. From its relation to what is above, it attains the habit of the natural law. . . . It is also related to the lower reason, which treats particular cases, and, in treating them, because of a defect of reason, will, and free judgment, it sometimes acts precipitately.[30]

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[29] *Ibid.*, m. 4, ad 1 (Borgnet edition: XXXIII, 205): Scientia iuris humani, quae casibus et mutationibus permixta est . . . tota die variatur, et ad nullam uniformem regulam redigi potest; *ibid.*, ad 2: Aristoteles loquitur de scientia secundum quod est ex primis, veris, et immediatis; et hoc modo non loquitur Augustinus de scientia, sed secundum quod est ex coniecturis humanorum ad gubernationem vitae humanae pertinentium. For St. Augustine, any code of ethics whose norms were directly related to space and time would fall under the classification of science. Thus the lives of great men would be science. See *De Trinitate*, XII, 14 (*PL* 42: 1010): Quidquid propter exempla vel cavenda vel imitanda, et propter quarumque rerum quae nostris accommodata sunt usibus necessaria documenta, historica cognitione colligimus. Consequently, the life of Christ (both written and as lived in time) is the object of *scientia*, whereas His divine person is an object of *sapientia*; and just as science should lead us to wisdom, so does our knowledge of the life of Christ on earth lead us to the wisdom of contemplating His person now in timeless glory. See *ibid.*, XIII, 19 (*PL* 42: 1033-34).

[30] St. Albert, *Summa theologiae*, II, tr. 16, q. 99, m. 3, a. 2, sol. (Borgnet edition XXXIII, 244): Duo tamen habet in se synderesis per duplicem respectum: unum ad superius, et alterum ad inferius. A superiori regitur, inferius regit. Et per respectum ad superius attingit habitum legis naturalis, . . . Alterum habet respectum ad rationem inferiorem quae disponit particularia: et in his propter defectum rationis et voluntatis et liberi arbitrii aliquando praecipitatur. . . .

Reviewing the general lines of this theory as it developed in the writings of St. Albert, we find that in the earlier writings there was a decided tendency to reduce St. Augustine's theory of the lower and higher parts of reason to a very minor role in his own broader theory of practical activity. It was only towards the end of his life that he began to admit that the knowledge proper to the two parts of reason had a speculative-practical character. Secondly, it is clear that the hesitations and changes in his teaching on this point over the years indicate the genuine difficulty he felt when he tried to incorporate an Augustinian doctrine into his philosophical system, which grew more and more Aristotelian as time went on.[31]

IV

St. Thomas' treatment of the theory of the higher and lower parts of reason (to which he usually refers as *ratio superior* and *ratio inferior*) is even more striking evidence of the many problems faced by the great mediaeval thinkers who wanted to assimilate the wisdom of the past.

St. Thomas first refers to the higher and lower reason in his commentary on the *Sentences*, written during 1254-1257.[32] Largely because he was commenting on a section in the *Sentences* in which Peter Lombard had cited St. Augustine's text on the two parts of the reason in connection with the sin of sensuality, and also, perhaps, because of the influence of St. Albert the Great, St. Thomas discusses here the *ratio superior* and *ratio inferior* primarily in their relation to the appetite.[33]

[31] It is interesting to note that in the *Isagoge in libros de anima*, long ascribed to St. Albert but probably the work of one of his commentators, the *portio superior* becomes the *intellectus agens*, and the *portio inferior* becomes the *intellectus possibilis*. See *Isagoge in libros de anima*, ch. 31 (Borgnet edition: V, 534). St. Thomas refers to this teaching in his commentary on the II *Sentences*, d. 24, q. 2, a. 2, ad 1 (Mandonnet-Moos edition II, 606): Ratio superior et inferior non differunt sicut agens et possibile. . . .

[32] M. Grabmann, *Die Werke des hl. Thomas von Aquin. Beiträge zur Geschichte der Philosophie und Theologie des Mittelalters*, Band XXII, Heft I/II (1949), p. 287.

[33] *II Sent.*, d. 24, q. 2, a. 2, sol. (Mandonnet-Moos edition: II, 605): Ratio hic accipitur quae hoc modo se habet ad voluntatem et liberum arbitrium.

There is a hierarchy of values implied in the things that reason considers, St. Thomas writes, for some of the things we know are eternal and necessary, whereas others are temporal and contingent. Since what is eternal and necessary is the cause of what is temporal and contingent, it follows that ultimately all our values and directive norms for action are derived from eternal and necessary principles. As a consequence, the mind may be said to have two kinds of knowledge of eternal things, one practical, the other speculative. " Reason can dwell upon eternal things in two ways: it can consider them in themselves or it can consider them as they are rules for temporal things that we are to dispose or carry out. The first type of consideration is within the limits of the speculative reason; the second, however, belongs to the genus of practical reason." [34] The term *ratio superior*, St. Thomas continues, simply designates the reason as it consults " eternal and divine reasons " for counsel, whereas the term *ratio inferior* designates the reason as it draws its counsel from the created principles of morality which are treated in moral philosophy. There is no question of the two *ratio*'s being separate powers. If a distinction is to be made, it is to be made on the basis of the intellectual habits proper to each: the higher reason is perfected by wisdom, the lower by science.[35]

Two things should be noted in this important section: first of all, what St. Thomas means by our knowledge of the " eternal and divine reasons," and, secondly, what St. Thomas means by the wisdom which he speaks of as perfecting the higher reason. With respect to the first, it is clear that when St. Thomas speaks of the intellect's knowledge of the eternal reason, he is referring only to that knowledge of God which we have through discursive reasoning. There is no mention of

[34] *Ibid.*: Ratio aeternis dupliciter inhaerere potest: vel considerando ipsa in se, vel considerando ipsa secundum quod sunt regula temporalium per nos disponendorum et agendorum: et prima consideratio non exit limites speculativae rationis; secunda autem ad genus practicae rationis pertinet.

[35] *Ibid.*: Ratio superior et inferior non distinguuntur sicut diversae potentiae, sed magis secundum habitum, vel quem iam actu habet, vel ad quem naturaliter ordinatur: ratio enim superior perficitur sapientia, sed inferior scientia.

faith, illumination, or any kind of privileged knowledge of God. As a matter of fact, St. Thomas explicitly describes man's knowledge of values as a knowledge that is obtained " Through a kind of investigation and comparison "; and shortly after he speaks of the object of the *ratio superior* as being " Eternal and necessary things "—terms that would be surprisingly vague were they supposed to describe the truths of faith.[36]

The wisdom which St. Thomas asserts to be proper to the *ratio superior* also deserves note, for, whereas he ordinarily speaks of natural wisdom as a purely speculative virtue, the wisdom described here is both speculative and practical, inasmuch as the " eternal reasons " which are the object of the higher reason are not only the object of contemplation but also norms and rules of action. All of our ultimate practical judgments are made by the higher reason, he writes later, and precisely as it is perfected by this virtue of practical wisdom.[37] Hence, the *sapientia* of which St. Thomas speaks in this section is to be understood in a far wider sense than it usually is; and, of course, it is far closer to the *sapientia* described by St. Augustine than it is to the *sapientia* described by Aristotle.[38]

When St. Thomas comes to discuss *synderesis* in the *Sentences*, the echoes of tradition are even clearer. The very wording of the question, " Is *synderesis* a habit or a power? " recalls the position of William of Auxerre, who taught that *synderesis* was to be identified with the *ratio superior* and hence was a power.[39] St. Thomas, of course, refused to identify the two: to him *synderesis* was a special *habitus* arising from the knowl-

[36] *Ibid.*: In rebus autem quas ratio considerat, talis invenitur distinctio et ordo, ut quaedam aeterna et necessaria, a temporalibus discreta, eis proponantur. . . .

[37] *Ibid.*, d. 24, q. 3, a. 1, ad 5: Dico quod rationi superiori reservatur iudicium respectu ultimi, quod est executio operis: et ideo attribuitur sibi consensus in opus.

[38] The *sapientia* of St. Augustine, though primarily speculative, directs our entire life. See *De Trinitate*, XII, cc. 3-4 (*PL* 42: 999-1000). St. Thomas himself writes in *III Sent.*, d. 35, q. 1, a. 3, sol. 2: Sed tamen cognito contemplativa aeternorum aliquando pertinet ad activam vitam, non quod sit de essentia eius, sed quia praeexigitur ad ipsam sicut causa, dum rationes vivendi ex contemplatione aeternorum sumuntur.

[39] *II Sent.*, d. 24, q. 2, a. 3.

edge of self-evident principles in the practical order. It is not possible that *synderesis* be the same as reason, he points out, for the knowledge proper to it is had intuitively, whereas the operations of reason are all discursive.[40] Yet in this stage of his development, St. Thomas did not entirely dissociate *synderesis* from the *ratio superior* and *ratio inferior*. In the practical syllogism that terminates in a judgment of conscience, he writes, *synderesis* proposes as the major premise some general principle such as " Whatever is evil is to be avoided." The minor premise is supplied by the *ratio superior* or *ratio inferior*: by the former if the particular type of act in question is forbidden by the divine law, by the latter if the particular type of act is contrary to the created principles of justice. For example, the *ratio superior* will affirm that adultery is evil because forbidden by God, and the *ratio inferior* will affirm that it is evil because it is a violation of justice.[41] *Synderesis*, St. Thomas adds, can never err, for it consists primarily in the habitual knowledge of the general self-evident principles of the practical order—the conditions of the very possibility of intelligent action.[42] The *ratio superior* and *ratio inferior*, however, can and do err, either because a faulty step is made in the construction of the practical syllogism or because of ignorance as to how certain acts are related to divine or human law.[43]

The same general ideas are repeated in a later article interestingly entitled, " Can the higher spark of reason be extinguished? "—the " higher spark " being *synderesis*, and its name, *superior scintilla*, undoubtedly derived from the earlier doctrine that had identified *synderesis* with the *ratio superior*.[44]

When St. Thomas comes to discuss the relation of reason to

[40] *Ibid.*, sol.

[41] *Ibid.*, d. 24, q. 2, a. 4, sol.: Verbi gratia, synderesis hanc proponit: omne malum est vitandum; ratio superior hanc assumit: adulterium est malum, quia lege Dei prohibitum; sive ratio inferior assumeret illam, quia est malum, quia iniustum, sive inhonestum; conclusio autem, quae est adulterium hoc esse vitandum, ad conscientiam pertinet. . . .

[42] *Summa Theol.*, I, q. 79, a. 12, c.

[43] *II Sent.*, d. 24, q. 2, a. 4, sol.

[44] *Ibid.*, d. 39, q. 3, a. 1.

the movements of sensuality, he is faithful to the tradition established by Peter Lombard, and treats the problem almost exclusively with reference to the higher and lower reason.[45] The object of the higher reason, he asserts, is man's final end; hence, it is the higher reason that passes final judgment on what is ultimate in the practical order, namely, the act itself. Consent to the act is, consequently, to be attributed to the *ratio superior*. On the other hand, since the lower reason is not concerned with man's final end, its primary relation is to the means whereby some work can be carried out; and its consent is not to the act but to the pleasure which it sees involved in the means towards the act. St. Thomas coordinates the two consents, however, by pointing out that the same quality of judgment can be made about an operation and the pleasure involved in its execution.[46]

In a later article, St. Thomas discusses the condition of the higher reason as it is in itself and as it is when elevated by faith.[47] He begins by pointing out that, when it is possible for a potency to be elevated in some way to a level higher than its own proper level, two motions are to be found in that potency after its elevation: a sudden motion to its own proper object, and another, distinct motion to its new object. For example, in the sensible appetite as found in man there is a sudden connatural motion towards sensible objects; but, when the sensible appetite is, as it were, raised from its level of a mere sense power to a higher level through being habitually controlled by reason and the virtues, it has a new motion, one that follows the guidance of the intellect. In a like manner, when the higher reason is elevated by faith and given an object essentially higher than its own connatural object, it has a new motion towards this object—a motion directed by faith—but nevertheless it still retains in some measure its former spontaneous, natural motion. Hence, the *ratio superior*, even when informed

[45] See Th. Deman, O.P., "Le Péché de sensualité," *Mélanges Mandonnet*, I (Paris, 1930), 264-283.

[46] *II Sent.*, d. 24, q. 3, a. 1, sol. & ad 5. See also *ibid.*, d. 24, q. 3, a. 4, sol.

[47] *Ibid.*, d. 24, q. 3, a. 5, sol.

by faith, may suddenly and, as it were, instinctively recoil from accepting a truth of faith. When it does so, the offense is real but not grievous. However, if after the force of faith has made itself felt and the *ratio superior* still refuses to accept a revealed truth, the offense is serious.[48]

A study of the texts on *ratio superior* and *ratio inferior* in the *Sentences* reveals a very significant fact: St. Thomas rarely makes use of the theory except when his contemporaries or predecessors had done so when commenting on the same texts of Peter Lombard. Moreover, on several occasions when St. Thomas might easily have had recourse to the theory, he fails to do so. For example, when he treats the active and contemplative life, he makes no mention at all of the *ratio inferior* and *ratio superior*. As a matter of fact, St. Thomas's deepest debt in the articles on contemplation seems to be to Aristotle, whom he quotes twenty-nine times, whereas he refers to St. Augustine only four times.[49] Again, while discussing the gifts of the Holy Spirit and especially the nature of the gift of wisdom, St. Thomas refers to Aristotle eleven times but not at all to St. Augustine. It is only when treating the gift of science that he briefly mentions the *ratio superior* and *ratio inferior*, asserting that the former is perfected by the gift of wisdom, the latter by the gift of science.[50] In view of these facts, it seems clear that at this stage of his development St. Thomas did not consider the theory to be essential.

[48] This notion of a double movement in the higher reason seems to have been current in St. Thomas's time. St. Bonaventure rejects the idea in his commentary on the *Sentences*. See his *In II Sent.*, d. 39, a. 2, q. 3, ad 2 (Quaracchi edition: II, 915).

[49] *III Sent.*, d. 35, q. 1, aa. 1-4. In this section, St. Thomas quotes St. Gregory the Great fourteen times, Isidore of Seville four times, St. Bernard four times, Richard of St. Victor three times, and Proclus, Averroes, Cicero, Pseudo-Dionysius, St. Anselm once only.

[50] *Ibid.*, d. 25, q. 2, a. 3, sol. 2: Unde et inferior ratio quae et speculativa et practica potest esse, perficitur dono scientiae quantum ad operabilia, scientiis vero speculativis inquantum est speculativa. Sapientia autem rationem superiorem quantum ad utrumque perficit; quia superiores rationes quibus contemplandis sapientia inhaeret, etiam operationum nostrarum regulae sunt. Unde secundum quod assumit eas ut regulas operabilium, sic in praxim extenditur.

The principal article in the *De Veritate* (1256-59) concerning the *ratio inferior* and *ratio superior* is far richer in content than any of the articles on the same subject in the commentary on the *Sentences*.[51] First of all, whereas only five difficulties occur in the corresponding article in the *Sentences*, in this article there are fifteen. In the earlier work, moreover, the whole article was written chiefly from the viewpoint of the appetite. Here the bulk of the article is given over to a general discussion of the principles whereby powers are distinguished from each other. Finally, whereas in the *Sentences* St. Thomas had distinguished the *ratio superior* from the *ratio inferior* primarily on the grounds that the objects of the former are eternal and necessary while the objects of the latter are temporal and contingent, in the *De Veritate* his treatment is far more profound. He first points out that potencies which are the acts of determinate organs are specified by the nature of their objects; however, any " part " or potency of the soul which does not use a corporeal organ in its act is not thus determined and hence, in a certain sense, its object may be said to be infinite. The intellectual powers of the soul fall under this later category and, consequently, they cannot be distinguished or specified simply by the formal diversity of their objects. Another principle of specification must be used, and the only one possible seems to be the different formality (*ratio*) under which each intellectual faculty knows or attains its object. By virtue of this same principle, morever, it can be easily seen that there is no real distinction between the *ratio superior* and *ratio inferior*, for the objects of both are known only insofar as they are immaterial. It is possible, nevertheless, to distinguish mentally the *ratio superior* from the *ratio inferior*, for the objects of the former are immaterial in themselves, whereas the objects of the latter are made immaterial through the action of the agent intellect.[52] Another basis for distinction can be found in the

[51] *De Veritate*, q. 15, a. 2.

[52] *Ibid.*, corpus: Utraque autem, scilicet superior et inferior, secundum communem rationem intelligibilis ab anima humana apprehenditur; superior quidem prout est immaterialis in seipsa, inferior autem prout a materia per actum intellectus agentis

relations that arise out of the metaphysics of knowledge; for the intentional being possessed by our concepts of those things which are above the soul is inferior in perfection to the being possessed by those things in themselves, and the intentional being constituted by our concepts of things below the soul is superior to the being which these things have in themselves. Hence, on the basis of the *esse* of its concepts, the soul is related in two different ways: it has rights over that which is inferior to it, duties to that which is superior.[53] Thus, with these two principles, St. Thomas easily overcame the difficulties latent in his presentation of the doctrine in his commentary on the *Sentences*; a solid basis for the rational distinction between the two *ratio*'s was established; and the new principle of union (the common immateriality of their objects) permitted him to drop entirely the principle used earlier, namely, the fact that both *ratio's* terminate in a practical conclusion. The present principle allows for a union on both the speculative and practical levels.

St. Thomas makes another important extension of the theory of *ratio superior* and *ratio inferior* when he comes to treat sin. The *ratio superior*, he points out, does not have as its exclusive object only what is eternal and unchangeable. Any principle which a man might choose as the ultimate basis for his value-judgments can be its object: "There is no one who does not judge that something is the end of human life; and, when he uses that as a basis for his deliberation, he is using higher reason."[54] This notion is simply a development of St. Thomas'

denudatur. This, of course, is a decided change in St. Augustine's original theory of the lower part of the soul, whose objects were strictly material and were not made abstract by the intellect.

[53] *Ibid.*: Sunt enim quaedam naturae anima rationali superiores, quaedam vero inferiores. Cum vero omne quod intelligitur, intelligitur per modum intelligentis: rerum quae sunt supra animam, intellectus est in anima rationali inferior ipsis rebus intellectis; earum vero quae sunt infra animam, inest animae intellectus superior ipsis rebus, cum in ea res ipsae nobilius esse habeant quam in seipsis. Et sic ad utrasque res diversam habitudinem habet, et ex hoc diversa sortitur officia.

[54] *Ibid.*, q. 15, a. 4, ad finem: Nullus enim est qui non aestimet in aliquo esse

interpreting St. Augustine's phrase, " eternal reasons," in such a way as to have it signify abstract first principles in general; [55] but it is, however, a decided modification of the original theory as found in the writings of St. Augustine and as it was presented in the works of many of St. Thomas's contemporaries and immediate predecessors. When St. Thomas discusses the problem of *delectatio morosa* in the present work, he does not mention either the higher reason or the lower reason in the *corpus* of the article,[56] despite the fact that this problem had ordinarily been treated in this way from the time of Peter Lombard.[57] It is impossible to determine, of course, whether this occurred by accident or design; but what is clear is this: that apparently St. Thomas did not think that it was necessary to have recourse to the theory in order to set forth his own ideas on a subject that had been traditionally associated with it.

Similarly, when St. Thomas treats *synderesis* in the *De Veritate*, he does not mention the *ratio superior* or *ratio inferior* in the principal part of the article.[58] In answer to one of the arguments trying to show that *synderesis* is the same as *ratio superior*, however, he points out why there must be a difference between the two. With characteristic moderation, he begins by admitting that there is some resemblance between them, for the habitual knowledge of the universal principles of law, i. e., *synderesis*, includes knowledge of some of the things which pertain to the " eternal reasons "—for example, the principle that God must be obeyed. Hence, there is a certain affinity between *synderesis* and the *ratio superior*. In fact, St. Thomas continues, *synderesis* has for its object certain principles that

finem humanae vitae; et cum ex illo deliberationem accipit, ad rationem superiorem pertinet.

[55] *Ibid.*, q. 8, a. 7, ad 3 (third series of replies): Anima convertitur rationibus aeternis inquantum impressio quaedam rationum aeternarum est in mente nostra, sicut sunt principia naturaliter cognita, per quae de omnibus iudicat. . . .

[56] *Ibid.*, q. 15, a. 4.

[57] See, for example, St. Albert, *In II Sent.*, d. 24, F, a. 13, ad 2 (Borgnet edition: XXVII, 408); St. Bonaventure, *In II Sent.*, d. 24, p. 2, a. 2, q. 2 (Quaracchi edition: II, 581).

[58] *De Verit.*, q. 16, a. 1.

are also the object of the *ratio inferior*—for example, the principle that one must live according to reason.[59] Consequently, there is also a certain resemblance between *synderesis* and the *ratio inferior*. However, the *ratio superior* is quite different from *synderesis*, because the former has for its object things that are unchangeable by nature, whereas the latter has for its object merely truths that are unchangeable, and an unchangeable truth can be derived from things that are, in themselves, contingent and changing.[60] In a sense, then, *synderesis* resembles both the *ratio superior*, whose objects are immaterial in themselves, and the *ratio inferior*, whose objects are made immaterial by the action of the agent intellect.

It should be noted that in this article St. Thomas defines *synderesis* as " a natural habit of the first principles of the practical order, which are the principles of natural law." [61] By implication, therefore, he makes the principles of the natural law also a partial object of the *ratio superior*. Hence, it is not quite accurate to present St. Thomas's theory as though the *ratio superior* uses as norms for its judgments only divinely revealed law, whereas the *ratio inferior* uses as its norms the principles of natural law.[62] The *ratio superior* proceeds from the principles of the law of nature as well as from those of the law of grace; and the *ratio inferior* proceeds from the determinations or applications of the law of nature that are to be found in civil legislation or from a consideration of an act's intrinsic

[59] *Ibid.*, ad 9: Synderesis neque nominat rationem superiorem neque inferiorem, sed quid communiter habens se ad utrumque. In ipso enim habitu universalium principiorum iuris continentur quaedam quae pertinent ad rationes aeternas, ut hoc quod est Deo esse obediendum; quaedam vero quae pertinent ad rationes inferiores, utpote secundum rationem esse vivendum.

[60] *Ibid.*: Dicitur enim aliquid incommutabile propter incommutabilitatem naturae; et sic divina incommutabilia sunt. Et hoc modo ratio superior incommutabilibus intendit. Dicitur etiam aliquid incommutabile propter necessitatem veritatis, quamvis sit circa res secundum naturam commutabiles. . . . Et hoc modo synderesis incommutabilibus intendere dicitur.

[61] *Ibid.*, corpus: Est quidam habitus naturalis primorum principiorum operabilium, quae sunt naturalia principia iuris naturalis; qui quidem habitus ad synderesim pertinet.

[62] Cf. Vernon J. Bourke, *Ethics* (New York, 1951), p. 230.

decency, its utility, or general conformity with man's dignity as an intelligent being. This point, however, will be touched on again when we discuss St. Thomas's teaching in the *Summa Theologae*.

Only two other articles in the *De Veritate* contain matter relevant to the question of *ratio superior* and *ratio inferior*. In the first, an article on conscience, St. Thomas writes that in a practical syllogism, terminating in the judgment of conscience, *synderesis* proposes as major premise some general principle such as " Nothing is to be done that is forbidden by the law of God." The minor premise will be drawn from the knowledge had by the higher reason, e. g. " Sexual relations with that woman are forbidden by the law of God." The judgment of conscience will be formed in the conclusion, " I must abstain from that act." [63] Similarly, *synderesis* may propose as major premise some other principle such as " What is unjust is to be avoided," and if the *ratio inferior* provides as minor premise the information that a particular act is unjust, the conclusion of conscience will be that this act is to be avoided.[64] What is noteworthy here, of course, is that it is now the function of the *ratio superior* and *ratio inferior* to pass judgment, not on a type or class of acts (as it was their function in the parallel passage in the *Sentences* [65]), but on *particular* acts. In other words, their function now seems to resemble very closely the function of an Aristotelian *ratio particularis*.[66]

The remaining significant passage in the *De Veritate* occurs when St. Thomas takes up the kind of knowledge Adam had in the state of innocence. " In its natural condition," St. Thomas writes, " the object of the higher reason is not the divine essence

[63] *De Verit.*, q. 17, a. 2, corp.: Ut si ex iudicio synderesis proferatur, nihil prohibitum lege Dei esse faciendum; et ex superiori rationis notitia assumatur, concubitum cum ista muliere esse prohibitum lege Dei; fiet applicatio conscientiae concludendo, ab hoc concubitu esse abstinendum.

[64] *Ibid.*

[65] *II Sent.*, d. 24, q. 2, a. 4, sol. We have summarized this section earlier in this article.

[66] In the article on conscience in the *Summa Theol.* (I, q. 79, a. 13), St. Thomas omits any mention of the *ratio superior* and *ratio inferior*.

itself, but certain intelligible characters flowing from God into the mind, as well as other intelligible characters received from creatures. Both of these bring us to the perfection of seeing eternal things." [67] Aside from the relevance of this passage to a study of the use which St. Thomas made in his works of the theory of the higher and lower reason, it shows also that for him the object of the higher reason was not necessarily what is received from God through revelation but it can be also those things which we know about Him through reason alone.[68]

Between 1259, which seems to be the terminal date for the composition of the *De Veritate*, and 1266 when the *Prima Pars* of the *Summa Theologiae* was begun,[69] there occur no passages of any length or importance to this matter. The fact is worth noting, for the period 1259-1266 covers the years during which the *Summa contra Gentiles* was written. In the *Prima Pars* of the *Summa Theologiae*, however, St. Thomas makes use of the theory once again. The general teaching in this section of the *Summa* is the same as that found in the commentary on the *Sentences* and in the *De Veritate*; but St. Thomas' approach is quite different and, in a sense, more comprehensive, for he now links up the two *ratio's* with the two movements characteristic of the human intelligence, namely, the " order of discovery " and the " order of judgment."

Beginning his discussion with a citation of St. Augustine's classical description of the higher reason as that " which contemplates and takes counsel from what is eternal," and of the

[67] *De Verit.*, q. 18, a. 1, ad 9: Superioris rationis obiectum, secundum conditionem naturae, non est ipsa divina essentia, sed rationes quaedam a Deo in mentem influentes, et a creaturis acceptae, quibus ad aeterna conspicienda perficimur. See also *Ibid.*, q. 18, a. 2, corp.: Ita igitur in homine duplex cognitio erat: una qua cognoscebat Deum conformiter angelis per inspirationem internam: alia qua cognoscebat Deum conformiter nobis per sensibiles creaturas.

[68] The source of St. Thomas' theory of Adam's infused knowledge was probably what Peter Lombard wrote in *II Sent.*, d. 23, c. 3 (Quaracchi edition: I, 418): Cognitionem quoque Creatoris primus homo habuisse creditur. Cognovit enim . . . quadam interiori aspiratione, qua Dei praesentiam contemplabatur. Cf. Hugh of St. Victor, *De sacramentis*, I, vi, 14 (*PL* 176: 271).

[69] See M. Grabmann, *Die Werke des hl. Thomas von Aquin. Beiträge zur Geschichte der Philosophie* . . . , Band XXII, Heft 1/2 (1949), p. 292.

lower reason as that " which is intent on temporal things," St. Thomas points out that there is a certain order in our knowledge of these two kinds of things, for, although it is true that our knowledge of temporal things is the medium whereby we know " things eternal," [70] it is also true that, in a certain sense, our knowledge of things eternal is a medium whereby we know temporal things. He explains this reciprocal relationship as follows. In the order of discovery, the mind reasons from temporal things to a knowledge of the existence and attributes of God. Once having obtained this kind of knowledge, the mind reflects again upon nature and sees it, no longer in isolation, but dynamically directed towards God, its final end. The judgments it makes upon nature as a consequence of this new, richer knowledge, belong to the " order of judgment "—the *via iudicii*.[71]

The " order of discovery " is proper to the *ratio inferior* and is subordinate to the " order of judgment," proper to the *ratio superior*, since it is a means towards it. Moreover, although it is possible to distinguish the two orders, the motion of reason is but one—" the order of judgment " constituting but the term or perfection of the movement of the mind, begun with the " order of discovery." Consequently, there is no real distinction between the *ratio superior* and *ratio inferior*. They are simply two functions of one power or potency.[72]

[70] *Summa Theol.*, I, q. 79, a. 9, corp.

[71] *Ibid.*: Nam secundum viam inventionis, per res temporales in cognitionem devenimus aeternorum . . . ; in via vero iudicii, per aeterna iam cognita de temporalibus iudicamus, et secundum rationes aeternorum temporalia disponimus. This whole section seems to be a development of what St. Thomas wrote earlier, in connection with conscience, in *De Verit.*, q. 17, a. 1, corp.: Et haec duplex via in operativis distinguitur secundum duplicem viam quae est in speculativis; scilicet viam quae est inveniendi et iudicandi. This notion is applied for the first time to the *ratio superior* and *ratio inferior*, in the *Summa Theol.*, *loc. cit.*

[72] *Summa Theol.*, I, q. 79, a. 9, corp.: Sed eadem potentia rationis est, ad quam pertinet et medium et ultimum. Est enim actus rationis quasi quidam motus de uno in aliud perveniens; idem autem est mobile quod pertransiens medium pertingit ad terminum. Unde una et eadem potentia rationis est ratio superior et inferior. Sed distinguuntur, secundum Augustinum, per officia actuum, et secundum diversos habitus; nam superiori rationi attribuitur sapientia, inferiori vero scientia.

Two things are to be noted in this striking section of the *Summa*. First of all, since the knowledge of God which the *ratio superior* ultimately attains is had through creatures, there is no question but that this is natural knowledge of Him, not supernaturally revealed knowledge. Secondly, our knowledge in a certain sense makes a complete circle. We are led to a knowledge of things eternal through our knowledge of created things; but, once we acquire knowledge of the former, we make new judgments about created reality. In other words, once the intellect in that part of its movement called " the order of discovery " attains a knowledge of the ultimate cause of things, as it would from the evidence of generation and corruption, " the order of discovery " is replaced by " the order of judgment." The object of reason is no longer created objects and secondary causes but the first cause; and it is now the *ratio superior* that is operative. The wisdom of metaphysics replaces the science of natural philosophy; and, in its sapiential contemplation of God, the mind finds in Him the source of all truths, of all being, of all principles. God is to be the supreme guide in life, for all other truths are judged by their conformity with this subsistent Truth: " The principles which the lower reason uses are drawn from and directed by the principles of the higher reason." [73] It is in this passage that St. Thomas succeeds most fully, we believe, in assimilating St. Augustine's theory of the two parts of the soul into his own system of philosophy. Without altering the original significance and inspiration of St. Augustine's thought, St. Thomas successfully disengaged the theory from its neo-Platonic implications as well as from the clumsy additions of the early mediaevals, to make it a coherent description of the dialectical activity of the human mind moving from creatures to God and returning once again to creatures.[74]

[73] *Ibid.*, ad 2: Principia quibus utitur inferior ratio, deducuntur et diriguntur a principiis superioris rationis. Cf. *Ibd.*, I-II, q. 15, a. 4, corp.: Manifestum est autem quod superior ratio est quae habet de omnibus iudicare, quia de sensibilibus per rationem iudicamus; de his vero quae ad rationes humanas pertinent, iudicamus secundum rationes divinas, quae pertinent ad rationem superiorem.

[74] Commenting on this passage in the *Summa*, the late J. Péghaire, C. S. Sp.,

Yet it cannot be said that St. Thomas considered the *ratio superior* and *ratio inferior* as such to be an essential or integral part of his system. For instance, when he discusses *synderesis* in the *Summa*, he makes no use of them, despite the fact that explicit reference is made to St. Augustine's theory in one of the objections.[75] Again, in the principal article in the *Summa* on conscience, no mention at all is made of either the *ratio superior* or the *ratio inferior*.[76]

St. Thomas seems to have composed the *Quaestiones Disputatae de Malo* after finishing the first part of the *Summa* and before beginning the first part of the second section of this latter work.[77] In the *De Malo*, he makes very limited use of the *ratio superior* and *ratio inferior*, and, in the only passage in which he speaks of them at any length, he simply repeats what he had written in earlier works, namely, that moral judgments based on "human" standards of utility or decency are predicated of the *ratio inferior*.[78] He also refers to the two movements of the *ratio superior*, one "natural" and spontaneous, the other under the control of faith—a notion which, as we have seen, appeared in his commentary on the *Sentences*.[79]

There are only two passages of any significance to this matter in the *Prima Secundae*, which was probably written shortly after the *De Malo*.[80] In the first, St. Thomas simply applies the

wrote in his *Intellectus et ratio selon S. Thomas d'Aquin* (Paris, 1939), p. 149: Nous ne connaissons vraiment la nature des choses créées qu'en les plaçant à la lumière des choses divines, puisque dans un monde comme le concevaient saint Thomas et saint Augustin, la valeur véritable et par conséquent la vraie nature d'un être dépend de la place qu'il occupe dans l'ordre voulu par la Providence de Dieu.

[75] *Summa Theol.*, I, q. 79, a. 12, obj. 3.

[76] *Ibid.*, a. 13. See, however, *Quodlib.* III, a. 26, corp.

[77] See F. Van Steenberghen, *Siger de Brabant d'après ses oeuvres inédites* (Louvain, 1931), vol. I, p. 749.

[78] *De Malo*, q. 7, a. 5, corp.: Si quidem deliberatio rationis sumitur in aliquibus rationibus temporalibus, puta quod aliquid sit utile vel inutile, decens vel indecens secundum opinionem hominum, dicetur esse peccatum in inferiori ratione; si vero deliberatio fiat per rationes aeternas, puta quia est concordans vel discordans praecepto divino, dicetur esse peccatum in ratione superiore.

[79] *II Sent.*, d. 24, q. 3, a. 5.

[80] See F. Van Steenberghen, *loc. cit.*

principles he had laid down concerning the nature of the two *ratio's* in the *Prima Pars*. Every practical judgment that immediately precedes action, he points out, is ultimately derived from a hierarchy of values: we judge sensible things by our reason, and, in turn, we judge human principles by divine reasons or standards. Hence, the judgment of final decision or consent to an act must be predicated of that power whose object is the divine reasons or principles, and this power is the higher reason.[81] In the second passage of any interest, St. Thomas again asserts that the standards which the *ratio inferior* uses in its moral reflections are " created " standards, such as the standard of private or social utility, whereas the norms the *ratio superior* uses are the commandments of God, as known by faith or by reason. The relation of an act to human " created " standards is studied by the philosopher; its relation to the eternal law of God is studied by the moral theologian.[82] It may seem strange to many to find St. Thomas putting ethical considerations concerning the natural law into the realm of moral theology; but it must be remembered that to St. Thomas and to most of his contemporaries moral philosophy or ethics usually meant the Aristotelian notion of ethics, which considered man only as a part of the city or state. St. Albert the Great expressed this traditional view when he wrote: " The good of man

[81] *Summa Theol.*, I-II, q. 15, a. 4, corp.: Manifestum est autem quod superior ratio est quae habet de omnibus iudicare, quia de sensibilibus per rationem iudicamus; de his vero quae ad rationes humanas pertinent, iudicamus secundum rationes divinas, quae pertinent ad rationem superiorem. Et ideo quamdiu incertum est an secundum rationes divinas resistatur vel non, nullum iudicium rationis habet rationem finalis sententiae. Finalis autem sententiae de agendis est consensus in actum. Et ideo consensus in actum pertinet ad rationem superiorem, secundum tamen quod in ratione includitur. . . .

[82] *Ibid.*, q. 74, a. 7, corp.: Manifestum est autem quod actus humani regulari possunt ex regula rationis humanae, quae sumitur ex rebus creatis, quas naturaliter homo cognoscit; et ulterius ex regula legis divinae, ut supra dictum est. Unde cum regula legis divine sit superior, consequens est ut ultima sententia, per quam iudicium finaliter terminatur, pertineat ad rationem superiorem, quae intendit rationibus aeternis. The passage to which St. Thomas refers in this text is *ibid.*, q. 71, a. 6. Here in reply to the fifth objection he writes: Dicendum quod a theologis consideratur peccatum praecipue secundum quod est offensa contra Deum; a philosopho autem morali, secundum quod contrariatur rationi.

discussed by philosophers is simply his good as a citizen"; [83] and St. Thomas himself declared: "The Philosopher's intention is to treat the virtues as they are ordered to civil life. . . ." [84] Although the "Philosopher" mentioned here is, of course, Aristotle, St. Thomas considered Aristotle's ethics as being typical of a purely philosophical ethics.[85] Hence, as soon as man's relation to God is considered, we go beyond the "Ethics of the City" and enter into the realm of theology, for man's final end transcends his function as citizen and his natural capacities.[86] Yet this does not mean that the norms on which the *ratio superior* makes its moral judgments are exclusively theological; for the primary object of the *ratio superior* is the eternal law, of which the law of nature is a part.[87] Hence, the norms used by the higher reason are the norms of the law of nature, as well as of the law of grace.[88]

The *Secunda Secundae*, composed during the years 1271-72, is St. Thomas' longest and most detailed treatise on the virtues, but it contains very few references to either the *ratio superior* or to the *ratio inferior*. There are occasional allusions to St. Augustine's teaching on wisdom as belonging to the higher reason and science to the lower,[89] and, at one point contemplation is said to be prior to action because the contemplative "part" of our reason, the *ratio superior*, directs the active

[83] *In III Sent.*, d. 27, A, a. 1, ad 1 (Borgnet edition: XXVIII, 509).

[84] *Summa Theol.*, II-II, q. 161, a. 1, ad 5.

[85] *IV Sent.*, d. 14, q. 1, a 1, tertia quaestio—ad 4: Philosophi autem non consideraverunt virtutes dirigentes in actibus humanis prout ordinantur ad Dei providentiam, sed prout ordinantur ad bonum humanum. See M. D. Chenu, O.P., "Les 'Philosophes' dans la philosophie chrétienne médiévale," *Revue des sciences phil. et théol.*, XXVI (1937), 27-40.

[86] *III Contra Gentiles*, c. 147: Ultimus finis hominis in quadam veritatis cognitione constitutus est quae naturalem facultatem ipsius excedit. For a splendid analysis of St. Thomas's teaching on man's ultimate end, see the unpublished thesis of Jules J. Toner, S.J., *The Notion of Spiritual Nature according to St. Thomas Aquinas* (University of Toronto doctoral dissertation, 1952).

[87] *Summa Theol.*, I-II, q. 91, a. 2, c.: Et talis participatio legis aeternae in rationali creatura lex naturalis dicitur.

[88] *Ibid.*, q. 71, a. 6, ad 5: Per legem aeternam regulemur *in multis* [italics ours] quae excedunt rationem humanam, sicut in his quae sunt fidei.

[89] E. g., *ibid.*, II-II, q. 45, a. 3, c.

" part," the *ratio inferior*.[90] However, in this long treatise on the moral life, no question, no article is devoted to a detailed exposition of the theory.

The third part of the *Summa*, which belongs to the years 1272-73, similarly contains very few references to the two *ratio*'s. It is only when St. Thomas comes to treat the sufferings of Christ that he makes any extensive use of the theory. He writes, for example, that although the entire soul of Christ suffered when its lower " parts " suffered, nevertheless His *ratio superior* considered in itself did not suffer, for it was firmly fixed upon God.[91] In the succeeding article, St. Thomas elaborates somewhat on this point, asserting that although the higher part of the soul of Christ did not suffer, since it enjoyed the beatific vision at all times, nevertheless it can be said that His entire soul suffered, for His sorrow was in His soul, the substantial form of His body.[92] It should be noted, however, that the use of the *ratio superior* in connection with the sufferings of Christ was probably quite common during the time St. Thomas wrote the third part of the *Summa*. It is found, to mention only two examples, in the works of both St. Albert and St. Bonaventure, who treat it as being a fairly well-known teaching.[93] Hence, St. Thomas's use of this notion may indicate, not that he held it to be important, but simply that he hesitated to abandon a traditional treatment of a theological problem such as the knowledge and sufferings of Christ.

[90] *Ibid.*, q. 182, a. 4, c.

[91] *Ibid.*, III, q. 46, a. 7, c.: Superior ratio non patiebatur in Christo ex parte sui obiecti, scilicet Dei, qui non erat animae Christi causa doloris, sed delectationis et gaudii. This whole question had to be handled with great delicacy, for St. Albert writes *In III Sent.*, d. 15, A, a. 3, sol. (Borgnet edition: XXVIII, 270): Fuit enim praedicatum quod Christi anima non fuisset passa secundum partem superiorem a quodam abbate, sed Parisiis ab universitate Magistrorum pro haeresi condemnatum est.

[92] *Summa Theol.*, III, q. 46, a. 8, corp, and ad 1.

[93] See St. Albert, *In III Sent.*, d. 15, A, a. 3 (Borgnet edition: XXVIII, 269); St. Bonaventure, *In III Sent.*, d. 16, a. 2, q. 2 (Quaracchi edition: II, 490-97).

V

Reviewing the texts of St. Thomas in which the *ratio superior* and *ratio inferior* play a role, one is led to conclude that the doctrine is not a critical one for his general noetic. The same impression is reinforced if one notes the numerous passages in his works where he might easily have made use of the theory but failed to do so.[94] Moreover, in his commentary on the *Sentences*, St. Thomas employs the notion of *ratio superior* and *ratio inferior* almost exclusively in those sections where his contemporaries had employed it when commenting on the text of Peter Lombard—a fact which seems to indicate that St. Thomas was merely following an accepted procedure.[95] The bulk of St. Thomas' treatment of the two *ratio's* in his more independent works, the *De Veritate* and *Summa Theologiae*, occurs in conjunction with the problem of *delectatio morosa*, but the conjunction had been made almost a century previously by Peter Lombard and a tradition had been established by later mediaevals before St. Thomas took up the matter. It should be noted, too, that his principal exposition of the two *ratio's* in the *De Veritate* is to a large extent simply a general discussion of the principles whereby faculties are specified; [96] and in the *Summa* a good part of one of the key texts is given over to a discussion of the *scientificum* and *opinativum* in Aristotle.[97] In short, because of St. Thomas's general tendency to treat the two *ratio's* in theological questions only when others had done so and because of his failure to develop or fully exploit the resources of this theory when the occasion was present for doing so, it seems quite certain that St. Thomas did not consider the doctrine of *ratio superior* and *ratio inferior* to be of capital importance.

[94] To cite only a few passages, in the *Summa Theol.*, I, q. 12, a. 12; *ibid.*, q. 12, a. 13; *ibid.*, q. 84, a. 5; *ibid.*, q. 88, a. 1. Any one of these passages concerning the soul's knowledge of God provided numerous opportunities for a treatment of the *ratio superior*, but it is not mentioned even once.

[95] On the authority of the *magistri*, see M. D. Chenu, O.P., *Introduction à l'étude de saint Thomas d'Aquin* (Paris, 1950), p. 114.

[96] *De Verit.*, q. 15, a. 2.

[97] *Summa Theol.*, I, q. 79, a. 9, ad 4.

What is to be remarked, however, is the complete mastery of St. Thomas in finally incorporating its valuable elements into his own writings. What St. Albert partially succeeded in doing St. Thomas did with such success that the theory was entirely freed from the neo-Platonic implications with which it had been burdened by the middle of the thirteenth century, and it was made to conform with the general lines of his own profound thought. As Jacques Maritain has observed, the doctrine of *ratio superior* and *ratio inferior* as found in the writings of St. Thomas remains rich in possibilities for the Christian philosopher.[98]

R. W. MULLIGAN, S. J.

Loyola University
Chicago, Illinois

[98] Jacques Maritain, *Science et sagesse* (Paris, 1935), p. 265.

ORTHODOXY OF THE TRANSFINITE NUMBERS

TRANSFINITE numbers have aroused lively controversies between mathematicians and philosophers. The twofold problem of their nature and significance is still open, despite their scientific use and value. In trying to solve it, one must ignore the conflicting opinions of experts and rather take into account the actual practice of the theory of sets and the technical discussions among mathematicians concerning their systematization and applications.

Galileo was the first to draw attention to certain curious properties of classes of numbers, when he showed that the unending sequences of natural numbers and of even numbers are coextensive. Yet his contemporaries refused to consider such sequences as wholes and thus pronounced themselves against "infinite" numbers. Among the empiricists, Hobbes argued in his *Elements of Philosophy* that the human mind gives a finite character to whatever it determines: if therefore one speaks of an infinite number, one gives to number an indetermination which is not appropriate to its notion. In his *Essay Concerning Human Understanding*, Locke held that the idea of an infinite number implies the impossible adjustment of a fixed standard to an increasing magnitude. For him the idea of an infinite quantity is contradictory; because it is impossible for the mind to possess simultaneously such a fixed idea and also the vision of all the successive numbers which make it; in other words, it can never grasp the completion of such a ceaseless repetition.

Among the rationalists, Descartes stated in his *Principles of Philosophy* that an entity which has no limit must be considered as indefinite and not as infinite. In his *New Essays* Leibniz denounced "the absurdity of the actual notion of an

infinite number, since the infinite cannot be a true whole," and he rejected the idea of an actual infinite magnitude. Though he recognized the similarity of the classes of the natural and of the even numbers, he affirmed that the idea of a number of all natural numbers implies a contradiction. Curiously enough, he pronounced himself in favor of an infinitely small being in his metaphysics, although he would deny that an infinite line is composed of parts.

These remarks have now an historical interest, as no theory of infinite numbers existed at the time. Proper discussions of the transfinite began with the Cantorian creation of infinite sets, and developed with the contributions of Weierstrass and Dedekind to the philosophy of number. From the outset controversies centered on the validity of the axiom that the whole is necessarily greater than the part, on the contradictions resulting from the application of the categorical properties of the finite to the infinite, and on the existence and constructibility of transfinite numbers. A triple question is involved in the last difficulty: the value of the axiom of Zermelo, the meaning of the hypotheses of the continuum and of the succession of alephs, and the problem of knowing if the set of real numbers is ordered or not. Such discussions became permanent fixtures of mathematical logic, especially since the famous quarrel between Russell and Poincaré about the foundations of analysis.

Mathematical tradition was limited previously to the study of finite numbers, which restricted the full investigation of the properties of number. With the establishment of a mathematical theory of infinite sets, a specific doctrine was needed to explain and justify their peculiar characters. The Cantorian creation of the theory of sets does not require an actual infinite, or the sensory representation of infinite numbers, or even the necessity of counting all the units of such aggregates. A set is not an empirical but a conceptual totality generated according to precise laws. Thus, the number ω is a symbol representing in a way the rule that there is no last element within the succession of natural numbers. Likewise, every transfinite num-

ber stands for a law of generation of a class of numbers taken as a whole.

But these considerations do not eliminate the infinite from the construction of transfinite numbers. That is why Kronecker was one of the first to question their validity, by taking an attitude worthy of a Pythagorean of strict observance. In order to give precision to the exposition of mathematics, he wished to banish from it the indetermination involved in the infinite and in intuition. He thought that mathematics should be established on finite constructions utilizing natural numbers exclusively. In particular, the mathematical objects should be constructed in a finite number of steps, and not by using purely logical operations or transcendental (a priori) proofs of their existence. The finitist school, now represented by Brouwer and his disciples, stretched this attitude to its final logical conclusion, by questioning the validity of the Principle of the Excluded-Middle and consequently of an important portion of mathematical analysis.

By applying this rule of constructibility to mathematical notions containing the word *all* in their expression, one reaches the paradoxes which characterize them as illegitimate totalities. Going beyond the arguments stated by Zeno of Elea more than two thousand years ago, Burali-Forti indicated in 1897 that the ordered collection of *all* the ordinal numbers defines a new ordinal number which is not part of that initial totality. In 1902 Bertrand Russell inquired if the class of *all* classes which are not members of themselves is a member of that class. Whether affirmative or negative the answer involves an antinomy.

This is the famous paradox Russell stated in a letter to Frege, who had written his monumental *Grundgesetze der Arithmetik* (1893-1903) to provide a logical foundation for the idea of number. By rightly defining a cardinal number of a given class as the set of all the classes similar to it, Russell undermined the bases of Frege's construction. Yet, the works of Frege and their subsequent utilization by Russell himself, who thought of

avoiding their main difficulty by his theory of logical types, opened up a fertile field for the logical interpretation of mathmatics.

If this attempt could not be decisive, it made it possible for transfinite numbers to find a respectable place in the body of science. The technical prolegomena relative to these numbers show clearly that the mathematical reality of transfinite numbers is fully acceptable. Their theory, which seems to be exempt from technical contradictions, is connected with the common basis of established scientific knowledge and has important application in several branches of mathematics.

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The philosophical question remains whether the transfinites are true numbers. We may answer by showing their agreement with the basic Aristotelian theses on number and quantity which may be summarized as follows: (1) Quantity is an accidental property and not a constitutive element of substance. (2) Quantity and substance cannot be separated in the concrete world, since quantity makes substance divisible and gives extension to it by ordering its parts. Thus quantity makes possible the division of a given whole into discrete parts having the same nature as the whole. (3) Quantity manifests itself under two irreducible aspects: the continuous and the discrete. (4) The discrete generates the idea of number. (5) Number is a specific plurality measurable by the unit (*multitudo mensurata per unum*); it is a collection of units which is finite or undetermined. (6) There is no actual infinite in relation to number or magnitude. The characteristic of number rests in its ability to be increased or decreased at will, with a different result for each operation. Hence, it is impossible to think actually of the totality of all numbers.

Taken too literally, the classical theses on number may seem incompatible with the notion of the transfinite. However, by using a wider conception of number resulting from a biunivocal correspondence between distinct classes as well as some remarkable analogies of the transfinites with certain classical species

of numbers, the transfinite can well be integrated into the traditional notion of number properly interpreted. Such extensions are permitted in the perspective of the successive generalizations of the notion of number, from the Pythagorean integers to the modern theories of algebraic and transcendental numbers. It is unnecessary to stress here the incompatibility of attributes: it is more important to rationalize the novelties which science has succeeded in integrating into its vast field, so as to justify their subsisting side by side with the older contributions.

The notion of the transfinite is not based on an actual infinite, even though we consider as totalities classes whose members have never been enumerated completely. In the second order of abstraction, such conceptual constructions are permissible and practicable. Thus a circumference of a given radius can be considered as a determinate and infinite totality: It is the non-enumerable set (transfinite power of the continuum) of points equidistant from the center of the circumference. This definition identifies an ever-increasing number of points with a complete whole. For operational considerations, modern science gives to the number of this set as a whole a particular quality which differentiates it from any type of finite number.

At this stage an important distinction in the notion of the infinite must be mentioned. The actual infinite involves a non-limitation required by the fulness of the pure act: only God can give being to the actual infinite. But in the potential infinite, the non-limitation is due to the indetermination of potency itself. Hence, it is possible to imagine a non-limitation as due to a definite intelligent act, which somehow exceeds or continues an undetermined and always incomplete succession of similar acts. The resulting concept is not a potential infinite involving an addition without end, but a pre-precise and finite notion which fixes in the mind the indetermination of the potential infinite. A transfinite number is therefore properly determined as such; but the number of its actual elements is undetermined, since their enumeration or the repetition of a

biunivocal correspondence never stops, owing to the endlessness of the integers series.

To be sure, a transfinite number is actual in one sense and potential in another. Its nature does not depend on its quantitative continuum or on the number of its elements; but on the qualitative mode of the indefinite generation of its elements as a set. And as it is possible to conceive different qualitative modes of producing sets, it is legitimate to introduce distinctions within the transfinite and to conceive a variety of transfinite numbers. Moreover, since potency as such is capable of several determinations, it allows differences between them. Although expressed as numbers, these differences are qualitative, since they are accounted for by the mode of determining and grouping the possible elements of the given potency. For example, there is a quantitative difference between prime numbers and odd numbers, although both species use the same integers in explaining their distinctive characters. It is then possible to extend the notion of number to these species or sets, because they entail a numerical continuum ultimately reducible to integers and because they can be subjects of operations.

The symbols or marks of the various transfinite numbers express their unity as complete wholes or totalities, as well as the intelligent act which distinguishes one from the other in the first place. The foundation of their diversity is not the number or the individual quality of their elements: it is the quality of the sets of indefinite multitudes, as signified by distinct symbols, which constitutes the form of the various transfinite numbers. As such they are really *in esse* and not *in fieri* as one may be tempted to conceive them. Thus the differences between the various *alephs* are due to the specific generation of each one of them. Again transfinite ordinals are distinct between them, because of the specific rule of order each represents. Although each of these various numbers entails an infinity of elements, their numerical indetermination does not affect the stability and the specificity of the rational essence of the transfinites. On the contrary, this very indetermination

allows the construction of specifically different transfinite numbers.

Ingenious devices have been invented to work out biunivocal correspondences between various categories of numerical elements, and to establish the first fundamental distinction between enumerable and non-enumerable sets. The power of a set is equal to or greater than the power of the continuum, when its elements cannot be enumerated actually. The difference between enumerable and non-enumerable sets is conditioned by the use of a biunivocal correspondence, and not by numerical relations. In both types of sets, the number of their elements cannot be computed. They differ by the manner in which their elements are grouped. This qualitative distinction entails different laws of construction, different mode of generation and hence different marks (numbers) to symbolize their sets.

In the light of these remarks, we may understand better the expressions " many " or " all and part " when applied to the transfinite. A numerically determined whole and a numerically determined part of it are actually unequal. But if a whole and its part have both an indefinite number of elements, then their presumed inequality cannot be verified actually. In fact, by establishing a biunivocal correspondence between their homologous elements, it is soon realized that this process can be continued indefinitely, thus making it impossible to determine actually the intuitively presumed inequality of the two sets: hence the decision to consider them as equal. Particular considerations concerning the equality of two intuitively unequal wholes need not be analyzed at this stage, because the distinctions just made are adequate and precise. Whatever be the order of the elements of two sets or their transfinite ordinal numbers, these sets may be considered equal, when their elements can be arranged in such a manner as to allow a biunivocal correspondence between them. In this sense only can it be loosely said that the whole is equal to the part. Such views constitute the ground of the many theorems concerning the properties of sets and of the transfinite cardinals, as well as of

the operations relative to cardinal and ordinal transfinite numbers.

These developments show that the arithmetic of the infinite entails a calculus of qualitative groups of elements rather than of quantitative groups of units. As the arithmetic of the infinite thus differs from ordinary arithmetic and from classical algebra, it is appropriate to insist on some fundamental implications.

The discrete essence of number is expressed by its relation to the unit. As a collection of units, finite or infinite, a number becomes one by reason of the order or the measure of its elements. But this oneness or unity in itself is transcendental, though the number as such may be predicamental, since it adds to being a reason of extension, measure or order. Against this Thomistic attitude, Scotus and Suarez denied that a number may be one by its own nature and asserted that its unity is constructed by the mind. That is why some think that the unit or number 1 is not formally a number, but only the principle of number. This Pythagorean and Platonic confusion of number 1 with the transcendental or existential one is dispelled by the Thomistic distinction between the transcendental and the predicamental aspects of number.

Transfinite numbers are not determined by comparing a multitude with a unit, but by comparing a multitude as a set with another multitude with respect to a biunivocal correspondence. It is true that the idea of unity is somehow implied in the notion of biunivocal correspondence, and even in the concept of transfinite number considered as a single class. Yet the unit is not used here as a term of comparison, but as a means of comparison. In a biunivocal correspondence, the actual number of pairing operations is not counted; it suffices to show that they can be carried out without leaving any unpaired elements. By insisting on the mode of pairing the elements of two sets rather than on the quantity of such operations, it is possible to avoid casual paradoxes in the concept of infinite sets, to establish significant differences between transfinite numbers, and to specify the meaning and use of the notions of ' all ' and ' part ' when applied to such constructions. Again, the transcendental

unity of a transfinite number is not considered as a numerical entity, but as a qualitative totality of elements. The mark of a number is given to such a set after its qualitative comparison with another infinite totality of elements.

These developments show that transfinite numbers do not increase or decrease by simple numerical units, as in the case of ordinary numbers, but by qualitative blocks or sets; and the results of such operations depend on the specific construction of such blocs or sets. It is even possible to verify fine distinctions in the manipulation of transfinite ordinals, where operations are determined by the notion of order and its varieties. Hence, operations with the transfinite are bound to yield results different from those with ordinary numbers. To be sure, such a difference was already noted with the use of the classical concept of infinity when the fundamental operations of arithmetic applied to the symbol (∞) give results different from those involving ordinary numbers.

The need of making operations with the mathematical infinite has been known for a long time: it was manifest in the quadratures of the ancients, as well as in the modern inventions which place a mathematical harness on limits, series, differentiation and integration, which use infinity in their own manner. Likewise, the infinite is manipulated by the analytic, the projective and the differential methods in geometry. But all these operations never pointed to any specifications in the single concept of the mathematical infinite, of which the sign (∞) still remains the classical representation. While it is now possible to think of distinct levels within the infinite, and to characterize each of them by the special symbols of the transfinite numbers.

The mathematical existence of transfinite numbers is more clearly affirmed by the absence of any internal or external contradiction in their notion. In fact, it is possible to conceive the existence of infinite and different multitudes, without limiting the power of divine creation. For the absolute power of God can create indefinitely new multitudes of angels and other beings, leaving to our reason the care of ordering them. Now, transfinite cardinals reflect in their manner this very possibility

of divine creation; while the indefinite ways of grouping these multitudes would have their mathematical counterpart in the transfinite ordinals. Nevertheless, there is no multitude of co-existent well-ordered substances, for there are no actual infinite or transfinite numbers, although these concepts entail the mathematical infinite. Finally, as the generation of transfinite numbers is obtained by recurrence indefinitely repeated, the existence of the totality of transfinite numbers is not mathematically affirmed. Hence, the theory of the transfinite has nothing to do with the actual infinite.

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Controversies about the transfinite have resulted from the discovery of some famous paradoxes in the theory of sets and from the impossiblity of constructing certain sets.

Here is an example of one of the paradoxes of Bertrand Russell. Let us suppose that we are to make a catalogue of just those books which did not mention themselves in their contents. Should the catalogue include itself or not in the works listed? In the negative, it fulfills the rule of belonging in the catalogue and should be included. In the affirmative, it fails to fulfill the requirements for being included. This antinomy seems to make an answer to our question impossible. In general, some sets of classes include themselves and some do not. But it seems formally impossible to affirm whether a set includes itself or not, when it is defined as a set to which belong all those and only those classes which do not include themselves as members.

Many paradoxes of Russell, Richard, Burali-Forti and others burden the logical clarity of the theory of sets and seem to imperil the proper use of the laws of thought. Mathematicians such as Brouwer even go as far as to question the Principle of Excluded-Middle. In fact, in the paradox just mentioned, it seems impossible to decide whether or not to include the catalogue in the booklist as defined. This apparent difficulty of applying universally the Principle of Excluded-Middle affects the constructibility of certain sets: the only way then to justify their existence is by using the *method of indirect proof*, which

gives no direct means of constructing questionable sets and which prompted Brouwer to reject a sizable portion of higher mathematics.

While we do not propose to discuss here these opinions, we submit that the paradoxes of the theory of sets are not absolute: they arise partly from the confusion between the qualitative and the quantitative aspects of classes, and partly from using the formal notion of a set or class without specifying sufficiently its applications. By ordering properly the mathematical and the logical attributes of a set, it should be possible either to ignore certain questions as nonsense or to resolve the paradoxes involved in them.

The logico-mathematical difficulties of the theory of sets have divided mathematicians into three distinct schools of thought. The *intuitionists* or *finitists* represented by Brouwer admit as legitimate only the sets which it is possible to construct. Although many sets are justifiable indirectly by showing the absurdity of their impossibility, the convenient postulate of Zermelo, which supports these indirect proofs, only adds fuel to the controversy. Consequently, intuitionism rejects as invalid that fairly large portion of mathematics which involves all non-constructible classes currently used in modern analysis. Yet this attitude may seem rather odd, when one realizes that the parts of mathematics considered as legitimate by the finitists involve a large measure of intuition in their structure. The *formalists* with Hilbert as their principal representative are more liberal in accepting those sets which do not involve contradictions. Yet formalism meets also its difficulties; for it is impossible to formalize mathematics completely. In particular, Gödel has shown the impossibility of proving the non-contradiction of the foundations of arithmetic. Finally, the *conceptualists* legitimate the widest field of mathematics by requiring simply the ideal existence of the notions in use. The conflicting attitudes of these three schools obviously affect their views on the nature of the transfinite and of mathematics generally.

For our part, we may offer the following conclusion: transfinite numbers can be incorporated legitimately as numbers in

mathematics, by interpreting the general notion of number as a set of classes and by attributing to it some qualitative determinations of the mathematical infinite. Moreover, although transfinites do not derive immediately from experience by a direct abstraction, nevertheless their conception begins with experience, since the mind considers finite classes first before rising to the conceptual vision of infinite classes. Hence, transfinite numbers are constructions of the mind based on empirical data and reaching beyond according to permissible formal analogies. Finally, the difficulties involved in the analysis of transfinite numbers are inherent in their notion and do not necessarily conflict with the fundamental doctrines of traditional philosophy. An adequate interpretation of these difficulties allows integration of the transfinites into its wide system as legitimate developments of science.

THOMAS GREENWOOD

University of Montreal
Canada

NOTES ON OUR CONTRIBUTORS

Kevin A. Wall, O. P., S. T. Lr., S. T. L., is professor of philosophy at St. Albert's College, the Dominican House of Studies, Oakland, California, and a contributor to The Thomist.

R. W. Mulligan, S. J., received his doctor's degree at L'Institut Supérieur de Philosophie in Louvain and spent two years in post-graduate work at the Sorbonne (Paris). At the present time he is chairman of the department of philosophy at Loyola University in Chicago.

Thomas Greenwood, Ph. D., professor in the Faculty of Letters at the University of Montreal, has taught philosophy at the University of London (1930-1940), at the University of Ottawa (1942-1949), and other institutions.

George F. J. LaMountain, M. A., before joining the staff of Aquinas College, Grand Rapids, Mich., taught at St. Joseph's College, Collegeville, Indiana. He has done graduate work at The Catholic University of America and at Georgetown University.

William J. Hill, O. P., S. T. Lr., S. T. D., teaches dogmatic theology at the Dominican House of Studies, Washington, D. C. He is the author of *Proper Relations to the Indwelling Divine Persons.*

William A. Wallace, O. P., S. T. Lr., S. T. L., M. S., professor of natural philosophy at the Dominican House of Philosophy, Springfield, Ky., is a member of the Albertus Magnus Lyceum for Natural Science, River Forest, Ill.

Thomas C. O'Brien, O. P., S. T. Lr., Ph. D., teaches natural theology at the Dominican House of Philosophy, Dover, Mass.

BOOK REVIEWS

De Noetica Geometriae, Origine Theoriae Cognitionis. Auctore P. Hoenen, S. J., Romae: Apud Aedes Universitatis Gregorianae, 1954. Pp. 293 cum indice analytico.

The latest work by Fr. Hoenen sums up his studies on the foundations of geometry and the relevance of such studies to the formation of a general theory of scientific knowledge. Parts of the text have appeared in various articles in the *Gregorianum* from 1938 to 1943, but more than half of the work is original and the remainder has been emended and edited to give support to the author's main thesis. Fr. Hoenen's principal purpose is to examine the axiomatic foundations of Euclidean geometry with regard to major points that have come under modern criticism, and on the basis of this to propose an incomplete system of primitive (indemonstrable) propositions from which geometry can be deduced. His study is a noetic one in the sense that it is the function of *noesis* to make explicit the principles that are intuitively grasped by the mind *in actu exercito*, and then to clarify these by reflection (so that they can be understood) *in actu signato*. The author is at pains to show as a major conclusion of his work that this contribution is not only a possible beginning of noetic science, or a theory of knowledge, but is in fact the necessary beginning of all scientific methodology.

This main thesis of Fr. Hoenen is not without its controversial aspect. Yet the fundamental work that underlies it is quite sound and of considerable interest to those attempting to evaluate contemporary mathematics and logic from an Aristotelian viewpoint. In order then to recapitulate this contribution of Fr. Hoenen for the benefit of American readers, the first part of this review will be a synopsis of the main points in the development of his thesis. This will then form the basis for a brief analysis of the aspects most open to criticism in the light of traditional Aristotelian doctrine on scientific methodology.

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The first chapter of *De Noetica Geometriae* is devoted to a statement of the problem that is central to all scientific thought, but which is normally encountered first in the mathematical sciences. Actually it is a twofold problem, and it may be stated in this way: Whence arises the *necessity* of mathematical judgments respecting first principles and indemonstrable propositions, and whence arises the *exactitude* which is found in mathe-

matical concepts and has no counterpart in our sensible experience? These are the fundamental difficulties, but related to them are other problems that are much discussed by contemporary thinkers, such as the arithmetization of the continuum, the status of Euclid's fifth postulate, and the limitations of axiomatics. The author is of the opinion that a good start was made by Aristotle in delineating the general approach to all these problems, but he bemoans the fact that no one in the scholastic tradition has done anything to develop Aristotle's doctrine and apply it to current difficulties. Thus he is aware that he is moving into a virgin field in which he cannot hope to give all the answers, but he is interested more in making a good beginning than in expounding a complete systematic development.

The problem of necessity is approached in the second chapter and the solution is given, as might be expected, in terms of the Aristotelian theory of formal abstraction. Fr. Hoenen begins dialectically, furnishing many examples of judgments that are regarded as necessary by ancient and modern mathematicians. Then he seeks the common feature associated with this necessity, and expounds it in terms of the notions of implicit judgment and virtual judgment which he has explained at length in his *Reality and Judgment According to St. Thomas* (Chicago: Regnery, 1952). His conclusion is that necessary judgments are arrived at by formal abstraction through which it is seen (intued) that there is a formal connection which necessitates whatever is predicated of the subject. Experience is needed only insofar as these truths are abstracted from sense data, and compared to the other sciences, mathematics requires little experiential knowledge. *In casibus mathematicis . . . habemus abstractionem formalem, et ideo intuemur nexum formalem, ideo necessarium erit id, quod de subiecto praedicabitur. Sed, ut sciamus quid praedicandum sit, debemus respicere data sensitiva, sive in imaginatione sive ope sensuum externorum, quod est, ut verbis Caietani iterum utamur, 'proprium motivum et determinativum' praedicati.* (p. 61)

The notions developed in the second chapter are applied immediately to the problem of exactitude, the treatment of which is quite extensive and extends through the third and fourth chapters. The key difficulty is that sense data do not possess the exactitude with which they are clothed in mathematical treatment. If geometry takes its beginnings from sense knowledge, how can it achieve perfect exactness? This is not only a question of the nexus between exact notions, but of the very *existence* of such notions themselves.

The third chapter therefore takes up the general discussion of the existence of mathematical points, lines, and surfaces. Fr. Hoenen here emphasizes the order of knowing, and points out that the concept of an extended body or solid is given immediately in our knowledge. A necessary judgment then puts us in contact with the first property of extended being, its

divisibility. Thus the solid can be divided into two parts and these will be limited by the division. The limit exists between the parts, and by its very nature is an indivisible, for otherwise there would be more than two parts. This indivisible which is extended in two directions is called a " surface "; it is not necessarily a " plane," unless the solid is divided in a very special way. The surface can in turn be divided into two parts, and again there will be an indivisible limiting the parts, but itself extended in one direction, which is called a " line "; this too need not be a " straight line " unless the surface is divided in a special way. Finally the line can be divided into two parts, and the ultimate indivisible effecting this division is the " point." It is completely indivisible regardless of the way in which the line is divided, and therefore brings the divisive process to an end.

Dimensions correspond to these various ways in which a body can be divided. They exist mathematically in extended being and consequently can exist in nature. But can the notion of dimension be defined strictly? *Quid sit dimensio, definitione technica, quae constat ex genere et differentia specifica, definiri nequit. Tamen haec notio est perfecte clara; quid sit, perfecte intelligitur ex processu supra delineato. Ens extensum quod habet tres dimensiones, est extensum quod triplicem illam divisionem sustinet; et in hoc ente extenso dari possunt limites, qui duas dimensiones habent, resp., unam vel nullam. Habemus legitimam 'definitionem operativam.'* (pp. 77-78)

At this point the author takes up the question of infinite divisibility to show that a line is not merely a collection of points. He explains the notion of " locus of points " used in analytic geometry and proves that the line generated is truly continuous. He also discusses briefly the process involved in geometrical construction to make clear that this is not purely arbitrary, but that the mind of the mathematician is bound by the exigencies of the matter in which he makes his constructions.

Having disposed of the difficulty about the existence of indivisibles, Fr. Hoenen proceeds in the fourth chapter to treat of the exactitude of figures and relations. Geometers consider their lines and figures absolutely exact, but such entities have no counterpart in sense experience. Whence does this exactness arise? Also how can relations of exact equality between congruent triangles, etc., be deduced?

The solution to both these problem is found to be rooted in knowledge of extended being as it is the principle of individuation in the mathematical order. Extended being attained by intellectual abstraction is homogeneous continuous quantity, intelligible matter that is absolutely uniform. This makes possible not only the multiplication of figures in exactly the same species (formally and quantitatively), but also furnishes the basis for numerically distinguishing between figures simply by their position or situs. Fr. Hoenen explains that the moving of figures in this continuum is not

the same as a physical motion. Velocity and other factors are irrelevant, the only things significant being the new place and the notion of direction implicit in the motion. Applying these notions to the congruence of figures, he indicates how exact conclusions are possible, and this not purely from arbitrary suppositions but from the very nature of the continuum.

Concludere possumus: sicut in abstrahendis notionibus exactis superficiei, lineae, puncti (tanquam indivisibilium omnino vel sub certo respectu) ex datis inexactis sensitivis, mens nostra, ex intellecta natura extensionis, non solum notiones exactas concipit, sed ea obiecta mathematice existere intelligit, ita etiam in casu congruentiae ex intellecto extenso, ut est principium individuationis, figuras exacte aequales, solo situ differentes, non solum concipit sed eas existere intelligit et ex iis logice alias veritates deducere potest. Et ea quae antea videbamus, pro hoc casu repeti possunt: manifestum est, nos non (libere) creare haec obiecta; non volumus figuras congruentes existere, sed detegimus eas ut possibiles in extensione, quae est materia intelligibilis ex qua fieri possunt. (pp. 111-112)

The further question of exact geometrical figures is approached through an examination of primitive notions following the method of axiomatics. The author proposes a problem respecting the meaning of the two statements, " a point is situated in a line " and " a line passes through a point," in order to focus attention on the notion of *direction* which he states as primitive. The concept of angle, for instance, derives from that of direction. So does the definition of straight line: *Linea erit recta, si directio secundum quam per unum punctum transit, ulterius in ea, specifice eadem, conservatur, si per quodcumque punctum subsequens vel praecedens eadem directione, sine deviatione, transire pergit. Si in uno puncto habetur abrupte mutatio directionis, erit 'linea fracta'; si directio modo continuo variatur, erit linea curva.* (pp. 120-121) The plane can also be defined from sense experience using the notions of straight line and direction: *Superficies sensibiliter plana, quae in experientia nostra datur, talis est, ut per quodvis punctum transeat integrum continuum (fascis) sensibiliter rectarum, quae totae in superficie sitae sunt; omnis recta quae duo puncta arbitraria superficiei iungit, integra in ea sita est; haec superficies ex neutra parte concava est.* (p. 122) With these notions established as the *quid sit*, a simple examination of the continuum suffices to answer the question *an sit*. Such exact figures can exist in extension that is intelligibly homogeneous, notwithstanding the fact that they are not immediately verified in sense experience.

Fr. Hoenen briefly reviews Euclid's definitions and shows that the great geometer was quite consistent in framing these in the most fundamental manner possible. Then he approaches the problem of the famous parallel postulate to see whether this, though not immediately evident, can be justified through the use of the primitive notion of direction. He is ac-

quainted with the attempts of many modern mathematicians to do just this thing, and rejects their formulations:

Loco harum notionum usi sumus notione directionis; sed et haec iam saepius ad decidendum nostrum problema introducta est; inter philosophos v.g. a Renouvier. Et ibi quidem id est immediate evidens: per punctum extra rectam situm, unicam tantum eiusdem exacte directionis duci posse. Sed si haec notio non genetice explicatur et eius existentia, simul cum existentia rectae et plani, et eorum connexionum, non intelligitur et ope principii individuationis examinatur, subiacet difficultatibus, quas antea a mathematicis prolatas audivimus. Inde hanc notionem et has existentias omni cura examinabamus. Et in nostro modo evolvendi notionem directionis exactae, illae difficultates, ut vidimus, non subsistunt; et totus processus problema solvere videtur. (p. 139).

Yet the author allows that a non-Euclidian geometry, at least for two dimensions, can be real and cites the pseudosphere of Beltrami as a figure in which such a geometry is verified. This admission, however, is accompanied by a reservation on the terminology used in such geometries; they may use the same terms and axioms as classical geometry, but the exact sense of the terms and axioms undergoes change in the non-Euclidean application. (p. 140) Nevertheless this possibility raises a serious problem about the certitude of a Euclidean view of the universe and the general validity of classical geometry. Fr. Hoenen resolves this by stating that sensible objects in which the conclusions of non-Euclidean geometries are verified are nothing more than a part of the objects of classical geometry—they are objects that really lack curvature in a higher space. Rather than state that such objects are excluded in classical geometry, he would prefer simply to note that they were not examined in that geometry, and thus make the defect one of ignorance rather than error. But he does observe how remarkable it is that all the properties of a non-Euclidean continuum can be deduced from postulates stated in exactly the same terms as Euclid's with the sole exception of the fifth postulate. (p. 142)

Thus far in his work Fr. Hoenen has attempted to justify the foundations of classical geometry in the most primitive formulation possible. Now in the fifth chapter he raises the question of the ideal of science implicit in axiomatics, in an attempt to see how rigorous one can be in formally stating and justifying first principles. He contrasts the strict axiomatics of the early logical positivists with Aristotelian methodology as expounded in the *Posterior Analytics*, and shows how there has been some rapprochment between the two views; at least many moderns have corrected the earlier notions on formalism to admit that primitive notions for any system are basically undecidable within that system. Then he proceeds to justify the incompleteness of his own examination of first geometrical principles on the grounds that any more justification is practically and theoretically impossible.

In any conceptual manipulation that goes on in the mind, the terms that are used must ultimately make sense—otherwise the process is meaningless. This is obviously necessary in any subject-predicate relationhip; it is no less necessary in the process whereby first principles are justified. The mind moreover uses a certain natural logic, and continually has resort to phantasms in the judicative process. This *logica utens* shows up as an implicit syllogism of the mode *Barbara* that accompanies every mental operation. For example, when it is deduced from the equation $ax^2 = bx + c$ that $ax^2 - bx - c = 0$, there is implicit the syllogism: Every equation which is properly transposed from a valid equation is itself valid; but $ax^2 - bx - c = 0$ is properly transposed from a valid equation; therefore it itself is valid.

Inde habemus quod primo observamus: in omni tali processu in mente fit syllogismus (typi Barbara); non exprimitur verbis, sed mentaliter dirigit actum affirmandi conclusionem; id non facit, ut supra dictum est, ut norma extrinseca, sed ut activitas intellectus ipsius mentis, ut 'natura.' Est igitur syllogismus in 'actu exercito'; investigatio nostra noetica non introducit syllogismum, sed eius praesentiam detegit; facit eum transire ex actu exercito in 'actum signatum.' (p. 178).

Thus Fr. Hoenen defends the Aristotelian theory of demonstration and the spontaneous character of logical thought by insisting that even the rules used in modern logistics presupposes the validity of the logical processes their users are attempting to justify rigorously. In the light of his analysis, the notion of rigor in use among thorough-going formalists is seen to be naïve in the extreme. The author makes a telling point of the attempt to derive the notion of number in the *Principia Mathematica*:

Notamus insuper: in logistica, secundum Whitehead et Russell, et in aliis quoque systematibus, ipsi numeri arithmetici non ut cogniti supponuntur; eorum notiones et propositiones, quae de eis valent, modo logistico post immensum laborem praevium, inveniendae sunt. Tamen in centenis formulis quae praecedunt, adsunt v. g. in systemate interpunctionis, et haec systemata punctorum intelligenda sunt, et in sensu naturali adhibenda sunt, et ibi intrat sive agnitio figurae geometriciae, sive ordo numerorum naturalium, sive potius utrumque. Intuitive adhibentur ea, quae post multum laborem tandem aliquando cognosci dicuntur. (pp. 182-183)

Yet he does acknowledge the value of axiomatic formulation, particularly to lay bare the logical structure of the sciences. (p. 194)

Having cleared away difficulties respecting the problems of necessity and exactitude, and also having delineated the contribution of axiomatics to the clarification of primitive notions and mental operations, Fr. Hoenen turns to the fundamental subject of geometry in chapter six. He states that this subject is not constituted by the possible figures whose properties are deduced from first principles, but by the structure of extension itself from

which those principles flow. And the structure of which he speaks is the non-deformed Euclidean structure of extension that is fundamental to all other structures. (p. 198) He excludes " empty " space as the subject, and makes several precisions on the meaning of the concept of space, showing that ultimately all such notions must be reduced to the extension of bodies. (p. 207) He delineates the role of sense knowledge and imagination in attaining this proper subject, and indicates that these play a necessary but ancillary role to the intellect, which makes its judgment solely from the intelligibility of the matter itself. (p. 211)

The clarification of extension as it is intelligible matter is relegated to the final chapter of the book. Having noted that continuous quantity is the fundamental subject of geometry, Fr. Hoenen now shows that geometrical figures are themselves proper passions of the subject. They are contained potentially in the subject, and are actualized through construction, which itself constitutes a demonstration of existence. (p. 224) The construction is performed in Euclidean geometry through the use of ruler and compass. Yet despite the fact that sensible representations are inexact, the possibility of exact construction is perfectly understood and used in the mental operation. (p. 227)

Under the formal abstraction of mathematical science, matter is seen to have a twofold intelligibility, one passive and the other active, the latter arising from the former. Passively, it is first known as figurable, then as able to individuate figures of the same species, then as able to merge figures on contact. And this intelligibility in turn gives necessity to the operations of the mind actively considering such a subject. Constructions are made, and properties are deduced, but these are not arbitrary in any way. They are determined by the very nature of extension itself; the matter is necessary, and this of itself necessitates the mental activities. Mistakes can be made in any mental activity, of course, but these are *per accidens* to the science and are brought about by fatigue or inattention, not by the matter being considered. (p. 233)

This finally brings Fr. Hoenen to the main conclusion which he feels is intimated by his study of the foundations of geometry, viz., that this type of mathematical knowledge is the beginning of a general noetic theory. *Nam noetica est scientia, quae naturam ipsius intellectionis, noeseos, perscrutari intendit. Et consideratio principiorum mathematicorum non tantum de facto est prima pars noeticae, sed id necessario est, si cognitio nostra intellectiva ex sensibus derivari debet.* (p. 237) He summarizes the reasoning that leads him to such a conclusion in the following words:

Breviter resumamus. Intelligere est intelligere 'aliquid'; hoc 'aliquid' designat obiectum determinatum, specificatum. In origine hoc obiectum nondum potest esse 'ipsum intelligere' in genere; debet esse obiectum externum a sensu acceptum. Et in his primae intelligibilitates, quae in mente

nostra inveniuntur, sunt principia primitiva mathematica, non tantum axiomata, sed etiam aliae propositiones primae, i.e., immediatae, quae in deductione mathematica applicantur. Sed non sunt principia 'physica.' Noetica, quae examinat intellectionem nostram, scire debet 'quid sit intelligere' et id originaliter experitur in 'casibus mathematics.' (p. 240).

The author indicates that the general lines of development of this noetic science will first be in the realm of mathematical science, then that it should be extended to metaphysics, and finally that the return should be made to physics insofar as this is possible in view of the difficulty of the latter's subject matter.

* * *

For purpose of analysis, it will be convenient first to consider the geometrical portion of Fr. Hoenen's contribution, and then to evaluate this in its bearing on a general noetic science.

The problems of necessity and exactitude delineated by the author are indeed the central ones that must be met in defending the Aristotelian concept of mathematical science. The solutions to these problems which are given are, in the mind of this reviewer, the correct ones. Ultimately the difficulty must be resolved in light of the teaching on formal abstraction, because this is essential to understanding how the necessary, exact propositions of any science can be asserted about a reality that is sensibly contingent and imperfect.

It seems that Fr. Hoenen somewhat discredits the scholastic tradition, however, by overlooking the contributions of Cajetan and John of St. Thomas, to say nothing of St. Thomas, in *developing* Aristotelian doctrine. Obviously, immediate application to the difficulties of modern mathematics will not be found in these great commentators, but solutions to the basic problems have already been given by them and only await application by one who comes in contact with a modern difficulty. Benefit is to be derived, no doubt, from thinking these things through for ourselves, and certainly in expressing the doctrine in language intelligible to our contemporaries, but great originality is rarely required and sometimes even results in error that can easily be averted by patient study of the tradition. Significantly, Fr. Hoenen's erudition is more apparent in his citation of modern mathematicians and in his refutation of their pronouncements, than in his utilization of scholastic source material.

Originality of thought, on the other hand, does characterize the contribution of the author in his study of the foundations of geometry. His justification of " direction " as a primitive notion is particularly stimulating and of obvious utility. Perhaps this discussion could have been improved by a detailed examination of the limit concept involved when it is said that a line has a direction as it " passes through a point." Such terminology can be confusing and indeed might imply a contradiction, if the usual qualifications made in the calculus are not rendered explicit.

Another bit of terminology that can cause confusion is the way in which Fr. Hoenen speaks of verifying the *quid sit* of geometrical concepts first, and then proceeding to verify their *an sit*. This is directly opposed to the normal process of knowing, and is criticised in the *Posterior Analytics* as an impossible order of questioning. It is possible to know the *quid sit* and the *an sit* simultaneously, but never the *quid sit* before the *an sit* (II *Post. Anal.*, Lect. 7). What the author obviously intends by the *quid sit* is really the *quid nominis*, but these are quite different notions in classical terminology.

The evaluations of non-Euclidean geometry and axiomatics, though far from being the last word on these difficult subjects, are nevertheless worthwhile parts of the book. Yet there are two difficulties that this reviewer would like to raise concerning Fr. Hoenen's conclusion that non-Euclidean geometry is a *real* science which considers a part of the objects of classical geometry unnoticed by the classicists. The first respects axiomatic formulation. If, as Fr. Hoenen admits, the axiomatic structure of non-Euclidean geometry appears the same as Euclidean geometry (except for the fifth postulate), but actually the *sense* of the terms is changed, how can the scientific character of the former be preserved? For instance, if a line is actually curved, and is spoken of as *straight*, is this not a dialectical use of the word " straight " ? What is really intended by the term is " approximately straight " or " apparently straight," and this cannot be the basis for strict scientific reasoning.

The second difficulty respects the reality of the objects considered in non-Euclidean geometry. Fr. Hoenen takes the position that such objects really lack curvature in a higher space: *Nam ea obiecta, etiam ea quae sensibiliter sunt similia obiectis geometriae classicae (et de his agitur in problemate exactitudinis) non sunt nisi pars obiectorum geometriae classicae; sunt revera obiecta incurvata in spatio altiori.* (p. 142) What he intends by " higher space " is not at all clear. His entire preceding analysis is devoted to the justification of the three-dimensionality of the real continuum (homoloidal space). Can a space of *higher* dimensionality then be spoken of as real? Use of the term " dimension " to embrace time and qualitative heterogeneities introduced by the presence of sensible matter would seem to be nothing more than equivocation. Thus, on the basis of the arguments offered, Fr. Hoenen's conclusion appears over-drawn. More warranted would seem to be the inference that non-Euclidean geometry is either a dialectical extension of classical geometry, or a mixed science resulting from the application of mathematical principles to the objects of *physical* science.

We turn now to the evaluation of the author's thesis that noetic science has its necessary beginning in an examination of the foundations of geometry. Actually to call this a " thesis " is an over-statement; it is ex-

pressed in the form of a conclusion, but it has more the appearance of an after-though worked into the last twenty pages of the text. Not only is there a considerable intuitive jump from antecedent to consequent, but there seems to be little relevance of one to the other. Whence the summary judgment of this reviewer: *non sequitur*.

In fact, the very idea of a *science* devoted to noetic problems is highly questionable. The multiplication of " sciences " during the past century has so fractionated and compartmented scientific knowledge as to now render it practically inaccessible as a comprehensible whole. The current emphasis should be on restoring unity to scientific thinking, not on further decimating it.

Any science, whether it be a real science or rational science, presupposes a certain act of *intellectus* in understanding its first principle. Generally a dialectical inquiry at the outset suffices to bring the investigator to a grasp of these first principles. If he refuses actively to consider them, he is not an apt subject for acquiring the science. If he refuses them as erroneous, he cannot be refuted by the scientist as such, but must be referred to the supreme science which exercises a sapiential role in defending first principles, viz., metaphysics. Further, all scientific speculation about the real world reduces either to physics, mathematics, or metaphysics, depending on the degree of abstraction involved in attaining the object of the science. But there can also be a scientific treatment of the reflex activity of the mind in ordering its concepts, and this gives rise to a rational science, viz., logic.

The problem of knowledge as it relates to the foundations of geometry pertains in a way to all these sciences. It is a physical problem in the psychological sense, insofar as knowing is the act of a form in sensible matter; it is geometrical insofar as it is concerned with the properties of intelligible matter; it is metaphysical insofar as it defends the existence and truth of first principles under the aspect of being, completely separated from matter; and it is logical insofar as the mind reflects on the necessity of its own activity in ordering the concepts of the science.

Under the name of " noetics," Fr. Hoenen is considering all these aspects of knowledge except the psychological one. Granting, for purposes of discussion, the " scientific " character of such an enterprise, there is no inherent necessity that a general noetics should take its start from geometry, as opposed to any other real science. As a metaphysical problem, the necessary starting point is not mathematics but physics, insofar as metaphysics is the post-physical science (cf. W. H. Kane, O. P., " The Subject of Metaphysics," The Thomist, Vol. XVIII, No. 4 (1955). And as a logical problem, there is no inherent reason why logic, even material logic, should take its start from mathematics. Demonstration can be seen independently in any subject matter by natural logic, and reflection on demon-

stration and its prerequisites enables the rules to be formulated for a material logic (*ars logica*); the deduction of these rules as true properties then produces the science of logic (*scientia logica*). It is certainly true that the simplicity and intelligibility of mathematical objects make them the easiest matters on which to reflect. But the exclusive use of mathematical matters in which demonstration is always through the formal cause, also restricts the formulation of rules concerning the other causes, and this limits the development of logical science.

It would seem that the most obvious argument against Fr. Hoenen's conclusion is his own admission in the preface: *Sunt philosophi, forte non pauci, qui ubi in elucubratione philosophica effata geometrica, vel mathematica in genera, etiam si de simplicissimis agitur, obviam habent, statim a lectione et studio deterrentur.* (p. 7) If such scholars have mastered philosophy, notwithstanding their abhorrence of mathematical science, there is no necessary connection between geometry and noetics in general.

Moreover, in view of the author's preeminence as a cosmologist at the *Gregorianum*, it is surprising that he should so reject the noetic character of his own science: physics. It seems inconceivable to this reviewer that he should compare the two statements: *hoc corpus est figurabile* and *hoc corpus est electrizabile per frictionem* (p. 237), and conclude to the basic unintelligibility of physics. At least he might have proposed the physical proposition: *hoc sensibile est mobile.* The questions at the level he is investigating are not in the order of *an sit tale*, but rather properties immediately connected with the *quid sit*; otherwise they are not productive of true scientific knowledge, which must be *propter quid.* And electrification, by friction or otherwise, is not a *primum cognitum* in the physical order.

These, then, are the major points on which Fr. Hoenen's work appears open to criticism. Insistence on such shortcomings should not be taken as a condemnation of the work, for there is much of value in it and parts might even be suitable for translation into English (e. g., Chap. II through VI). Basically, this reviewer is opposed to the subtitle of the work, *Origine Theoriae Cognitionis*, because he does not think it is either justified or justifiable. Otherwise the main burden of *De Noetica Geometriae* is a cogent defence of Aristotle's concept of science; it counteracts the excessive preoccupation with formalism found among contemporary mathematicians, and delineates the proper role of intuition in establishing the foundations of mathematical science.

William A. Wallace, O. P.

Dominican House of Philosophy
St. Rose Priory
Springfield, Kentucky

Approaches to God. By JACQUES MARITAIN. Translated by PETER O'REILLY. *World Perspectives, Vol. I.* Edited by Ruth Nanda Anshen. New York: Harper, 1954. Pp. 128. $2.50.

Man is a complex being and so his spirit finds many approaches to the God who is the primal thing in his existence. These "reaches" to God are first of all cognitional; love and service come later. But intelligence has a dual role: one logical and discursive, functioning in its proper clime of essences; the other intuitive and non-scientific, simply grasping the concrete act of existing. The end of either is an awareness of the divine actuality; an awareness that is the normal effect of intellection, thus universal—even connatural for mankind, and anteceding any and all activity of supernatural faith. St. Paul wrote of it in terms of being the preamble to faith, "For the invisible things of God are clearly seen by the visible things which He has created."

It is these philosophic and pre-philosophic contacts of the human intelligence with its Maker that constitute M. Maritain's "approaches" to God. "Approaches" is a happily-chosen word. Only five of them are properly demonstrations of God's existence; the remainder of them derive from an experimental encounter with reality in which by quasi-intuition, previous to any philosophic or theological ratiocination, the being and pre-eminence of the Divinity is phychically held for certain.

All that M. Maritain has to say in this little volume he has said before; it is scattered throughout with references and citations from many of his earlier efforts among them *The Degrees of Knowledge* which is being republished. This is less a criticism of this present work than a testimony to the author's prodigious output. And indeed the book is fully adequate to its writer's intention of grouping in an articulated whole all those varied initial movements in the natural order of man's spirit towards God which Thomism envisions.

These "approaches" can be readily grouped into five categories: (1) a primordial pre-philosophic knowledge of God achieved in the natural intuition of being, (2) the five demonstrations of St. Thomas, (3) a "sixth way" in the intellect's reflexive intuition of its own spirituality, (4) three ways of the practical intellect in its experience of beauty, moral goodness, and the holiness of the saints, (5) the natural desire for the vision of God. Briefly, we may offer reflections upon them in order.

I. *The Natural and Pre-Philosophic Knowledge of God.* Here M. Maritain discerns a primordial contact with God in and through the intellect's intuition of the concept of being "in the intuitive perception of the analogical content of the first concept, the concept of Being." The psychological "moments" of this intellectual apperception, prior to every scien-

tific elaboration, are as follows: (1) an intuition of the concrete act of existing of things, (2) an awareness of one's own existence as distinct from, limited, and threatened by that of others, (3) a grasp (still intuitive) of unlimited or absolute existence, (4) a prompt, spontaneous reasoning, as natural as this intuition (and as a matter of fact more or less involved in it) "whereby, . . . I see that Being-with-nothingness, such as my own being, implies, in order that it should be. Being-without-nothingness—that absolute existence which I confusedly perceived from the beginning as involved in my primordial intuition of existence." This offers some difficulties.

First of all, the concept of being is universal and abstract, and this precludes its acquisition by way of an intuition. If intuition involves the immediate grasp of a thing in its very individuality and unique wholeness, it is incompatible with abstraction. Abstraction is always partial knowledge, leaving something behind and precising a "form" that is common to many. An intuition of the concrete existent is understandable, but not an intuition of being as such. True, the abstractive process here (in *ens ut sic*) is *sui generis*, for "the differences of being are formally being." Nothing is left behind; *ens* actually and formally contains all that participates being in any way whatsoever. Yet it does so only indistinctly and confusedly. If it be better said that the concept of being is transcendental rather than abstract, its acquisition still goes beyond an intuition.

The only sense in which it might be considered as a quasi-intuition is in its lack of discourse and demonstration. Thus the first principles of reason are considered as acquired through an abstractive process but in a quasi-intuitive manner.

Secondly, can it be maintained that this pre-scientific grasp of being includes an intuition, in the looser sense, of the analogical nature of being? Being is analogical; but does not the concept have to be considerably refined—through much reflection and comparison—before it *expressly* signifies this? This does not seem to be intued in the sense of presenting itself to the mind as self-evident. It is *per se nota in se* but not *quoad nos*.

And thirdly, if an analogy like that of inequality be grasped by the mind in a rather simple intellectual act, still the analogy involved here, between uncaused and caused being, between Subsistent and participated being, is that of attribution and is not possessed without some ratiocination (vulgar, and as yet unscientific) on the principle of causality and participation.

Briefly, the author seems here to have weighted towards intuition what is really only the uncritical knowledge achieved by "common sense"—i. e., a natural and spontaneous reasoning process which becomes when formulated in scientific terminology the philosophical equivalent of St. Thomas' *Quarta Via*.

II. *The Quinque Viae of St. Thomas.* The presentation here of St.

Thomas' classic five demonstrations is: *a non-controversial one*, (any explicit dealing with the conflicting interpretations of contemporary Thomists is obviously beyond the author's declared scope); *brief* (though the actual text of St. Thomas in q.2, a.3 is reproduced in notes at the end of the volume); and *significant* (for he does deal with the difficulties which inescapably confront the mind reared in modern scientism and in terms of that science rather than the archaic language of the ancient physics). The succinctness seems to be the end-product of some penetrating thinking on these classic proofs, but this may appear too neat and abbreviated for readers without some Thomist background. This might explain the review in the *New York Times* (Oct. 31, 1954) by W. N. Pittenger quoting Maritain as maintaining that these do not constitute five specifically distinct proofs. Maritain is quite correct in insisting on a formal, specific distinction. (p. 23) The context of the proofs here, of course, is philosophical unlike that of the *Summa*.

III. *The Intuitive Experience of the Proper Life of the Intellect*. Here M. Maritain offers a sixth "way," an addition to the five of St. Thomas. The intellect's intuitive reflection upon its own act issues in a perception of its own spirituality, i. e., its attribute as transcending the conditions of time. In this, the author understands that it can dimly surmise its own non-personal, eternal pre-existence. The subject of this pre-existence is perceived to be Self-Subsistent Thought.

Previously regarded as "belonging to the domain of research hypotheses" this reasoning is now proposed as constituting, "a genuine proof, a rationally valid way leading to a firmly established certitude." Its distinction from the five Thomistic proofs rests in this that it does not derive from a fact observed in the world of sense, nor does it have recourse to the principle concerning the impossibility of an infinite regress.

Nevertheless, this proof has very great kinship with the *Tertia Via*. The temporal posits the existence of the Eternal just as contingency requires the existence of the Necessary Being. In actual fact, the latter is the more ultimate reasoning since eternity is a *passio* of necessity. However, the major difference is the transference from the metaphysical to the psychological order. The timeless aspect of created thought is not reasoned to, but grasped in a vital experience. And it is not the logically perceived and reasoned truth, but the subjective experience which proves.

There is no difficulty in seeing how the reflex experience of our own intellection (*intellectus superior*) as only extrinsically subject to the conditions of temporality gives birth to the idea of intellection without such limitation. Then, the real existence of Subsistent Thought is readily deduced through the invocation of efficient and exemplar causality. But it is a little different to approach this truth in terms of an intuition that *my* thought is eternal in the Self Who is God. For this thought which is

eternal is not, in every sense, *mine*. Without invalidating it as a highly personal and experiential way to God, the psychological emphasis does make this proof very subtle, and seems to weaken its objective probative force.

IV. *Ways of the Practical Intellect.* (a) *Aesthetic Experience.* The mind of man can come to an awareness of beauty, which in virtue of its transcendentality stands in relation to an Absolute Beauty; is a correspondence with the beauty of God. This is poetic experience as delineated from mystical experience whether natural or supernatural. It rests upon a knowledge by connaturality—of a non-rational, quasi-intuitive nature. Such contact of the intellect with being is familiar to the Thomist, of course (e. g., that which issues from the Gift of Wisdom in mystical contemplation), but not the designation of it as "non-conceptual." It seems a misunderstanding of the role of the universal mental "species" to see it as an impediment to the spontaneous knowledge that poetry demands. How, after all, can the beauty of the creature, reflective of God's, be in the perceiving mind save intentionally—i. e., by an "intention" or "species"? And why cannot the activity of the interior sense powers such as the imagination and the *vis cogitativa*, subordinate to but simultaneous with the conception of the intellect, upon the unique, singlar existent account for this non-abstractive aspect of the cognition?

Maritain has pioneered much with the principles of St. Thomas in aesthetics, and, it may well be that the rich originality of his mind has achieved its surest expression in this area. But his insistence upon non-conceptual knowledge has never been convincing. The authority of St. Thomas himself cannot be invoked in favor of it; and it gives rise to serious difficulties. This is not to slight the contributions of Maritain to a Thomistic aesthetic; his efforts here are still unsurpassed.

(b) *Moral Experience.* Morality is something relative, a conformity. It implies an absolute. When the formal motive of my action is the good for its own sake I come close (I approach) to Him who is good in virtue of Himself—to Goodness Itself. This is to know God without being aware of it. There comes into being a conformity of intellect with its transcendent object (the Separate Good) effected by the will. (p. 98) This "unconscious knowledge . . . tends to pass into consciousness," where it "creates in the soul dispositions and inclinations which assist reason in its conscious exercise to discover the truth which corresponds to them." Against the background of such a moral experience it is still possible to deny consciously the existence of God, but this is only a theoretical atheism. Practical atheism requires a contrary moral experience "whose characteristic is the rejection of all transcendence."

This is the argument from the intuition of moral obligation. When formulated philosophically it is usually understood as a variation on the

Tertia Via. The first principle of the practical order is *per se* known and gives a knowledge of participated practical truth. From this one can deduce the existence of the efficient and exemplary cause thereof—Who is Practical Truth *per essentiam.* But Maritain has changed the focus. In the free *choice* of moral good, when the formal motive is the *bonum honestum*, " this very same act tends all at once beyond its immediate object, towards God as the Separate Good." This is readily understandable. But isn't the tendency only a virtual one? Some conscious knowledge of God would seem to be required before the ordainment (even *in actu exercito*) could be designated as " *actual and formal.*" (p. 96) This argument is constructed here very persuasively; its implications were more fully explored in the author's earlier " Range of Reason."

(c) Lastly there is the *Testimony of the Friends of God*, the example of the mystics, so forceful to the mind of Bergson. This is only an auxiliary " way," confirming or re-enforcing convictions gathered elsewhere.

V. *The Natural Desire to See God.* Having surmised the Author of nature in His effects, there arises in man (and totally naturally) an aspiration to grasp in an intellectual intuition the very essence of the Deity. There is no disputing that an avenue to God lies open to the human mind here—and one that nature herself offers to the entire species. But the precise possibilities, and the limitations implicit in this *angustia* of the spirit need to be noted well. A subtle analysis of this natural longing is thus called for—and the procedure is of necessity a theological one. The beatific vision promised us is, in very fact, supernatural—substantially and not merely modally so. Only in the light of such a revelation can it be understood what is involved in the hypothesis of a " natural vision " of God. Now the first conclusion pregnant in this revelation is that any such natural vision is actually an impossibility. For God is supernatural—of an entirely different order than that which lies mirrored in creation. He is more than First Cause and Ultimate End of this universe. He is Three-Persons-of-One-Nature. As such, He cannot be seen save by those whose spiritual powers have been elevated to a formal, physical yet analogical participation of God's own intellect and intellection. Nature tends, therefore, to what is *de facto* an impossibility. But here Maritain is saying that this natural tendency establishes rationally the possibility (not the fact) of a vision of God. (p. 113)

The confusion arises from the signification which the term " natural " bears in this context. The desire is not natural in the sense of innate. If so, it would be implanted by the Author of nature and thus be a tendency to what is not only possible but in some sense due. Faith perceives the error here.

Nonetheless Maritain writes: " There is *in the human intellect* a natural desire to see in His essence that very God whom it knows through the

things which He has created." (p. 109) And he adds, "according as it emanates from nature, it is a natural *and necessary* desire." (p. 111) These words can too readily suggest that the desire is a *pondus naturae* of the very faculty of intellect. Surely what St. Thomas means in I, q. 12, a. 1 is that *man* desires to see God, through his intellect—i. e., that the vision is to be elicited by the intellect, but that the desire is rather elicited by the will. The elicited character of this tendency is more certainly indicated if it be characterized as free rather than necessary—as do the majority of St. Thomas' commentators after Bañez' time. As elicited, the desire is measured by the knowledge which calls it into being—and it cannot go beyond such knowledge. Now *naturally* the intellect cannot know whether or not it is possible for it to see God. What is does know is that there is lacking any positive reason for believing that such vision in *impossible.* Thus the desire remains conditional and inefficacious. As John of St. Thomas notes (*De Fide*: D. II, a. 3, n. 10), it is one thing to judge that something is not impossible in itself and quite another to judge that it does not appear impossible to us.

In what sense, then, is this desire natural? In the sense that its specifying object is God as *formaliter* natural—God as the First Cause. This is to intue Him as He transcends the universe He has brought into being, yet being of the same order as it. Here it is the mode in which He possesses the perfections of this world (as uncreated, infinite, pure act, etc.) that distinguishes Him from creatures. (The Beatific Vision, on the contrary, is properly God's alone—in its very being and not solely in God's mode of possessing it.) Reason knows that it cannot grasp such an Object naturally, yet it desires *conditionally* such vision to be accomplished within itself supernaturally. But the supernaturality here is completely relative, as being *above* the intellects's natural endowments without being outside of what the Author of nature can bring it to. Thus when Maritain states that reason, without the illumination of faith, can establish the possibility of an order superior to nature (p. 113) (he does not mean the supernatural order as presented by faith), this is *super*-natural only in a relative way, as in a lesser fashion the angelic nature is above the human. Pure reason, then, can reach to the existence of this transcendent order which is proper to Subsistent Being; it knows that such is within the ambit of its adequate object (*ens ut verum*), even if beyond its proper object (*quidditas rei sensibilis*)—and so is there born a natural longing for what is beyond its natural powers. (Maritain designates it as "trans-natural"). But there is no knowledge of the very quiddity of the Divine Reality, and from this side (i. e., that of the object) vision may well be an impossibility. And indeed this is so, unless man be elevated, not to the order proper to the First Cause, but to that proper to God in His inner Three-Personal life as Author of Grace. In short, it seems to be going a bit far to say that the

rational establishment of an order superior to nature means that, ". . . through the divine generosity man can therein be rendered capable of knowing God in His essence." (p. 113) This is not to suggest that M. Maritain understands that the natural desire is innate, nor that a desire cannot be at once elicited and necessary. Neither is it to deny that this natural desire is a very effective *suasio*; an argument of probability having its own urgency.

All this is not to place merely cerebral strictures on M. Maritain's vital insights into man's natural pathways to God. It is only to express a caution that these be not overstated. Most of them are heavily weighted towards intuitionism and need the perspective which a strictly philosophical and theological evaluation can impose. It remains true they are " approaches " and not all " proofs "; God initiates them as He will and they are not to be bent to fit our mental categorizing of them. All of them are far removed from genuine " religious " experience; and, needless to say, they are remote from that contact with the living God which is possible only in the luminosity of Faith and in the activity of Grace.

This book is Volume One of a series entitled " World Perspectives," edited by Ruth Nanda Anshen. Its purpose is to recapture the authority of truth and human totality " on the basis of the sacredness of each human person and respect for the plurality of cultures." St. Thomas, who took truth where he found it, would approve.

William J. Hill, O. P.

Dominican House of Studies
Washington, D. C.

The Modern Predicament. By H. J. Paton. New York: Macmillan, 1955. Pp. 405 with index. $5.25.

The phrase thrust upon the reader by this book is " a point of view." For the modern predicament is brought into focus by the author's examination of the opposition between the points of view of science and of religion, an opposition whose acuteness makes modern a much older difficulty. Each, science and religion, is led to an impasse, surmountable only by an acceptance of its diametrical opposite: science to a practical impasse, the scientific inadmissibility of religious and moral truths necessary for practical life; religion, to a theoretical impasse, the speculative indefensibility of tenets necessary to religion's rationality. The line of reconciliation, in turn, becomes rather a matter of recognizing that opposite points of view need not be taken for real contradiction, but simply for a different perspective upon reality. Professor Paton's main concern, in fact, is to make religion's

point of view less " speculative " and consequently less of an impasse to that of science.

But the problem demands of the reader that he determine the perspective of the author himself. Professedly it is philosophical, directed towards the philosophy of religion, for the book is the finished product of the Gifford Lectures of 1950-1951, a series endowed as a study of " natural theology." While this latter is not to be understood in any scholastic sense, the definition of perspective remains philosophical. The intent of this philosophical study is to determine the principles that make religion possible; the grounds necessary to it that it be religion and not something else; and in so doing to set out some philosophical defense of religion. But there is no such thing as an indeterminate " philosophical " viewpoint; there are the viewpoints of diverse philosophies, each characterized by its premisses, its roots, and, unfailingly, by its assumptions. With Professor Paton, the nature of religion, the condition of its survival, its extrication from the modern predicament, are determined by his own philosophical perspective.

His philosophy is suspected by the reader in the preliminary examinations of possible grounds for religion, especially of any speculative effort towards super-empirical truth, and particularly of St. Thomas' *quinque viae*. The positive exposition of the author's own mind leaves no doubt; this is the *Transcendental-philosophie* of Immanuel Kant rephrased, and refurbished with allusions to contemporary trends of thought. With his preceptor, Professor Paton assumes the object of human knowledge to be immanent; its scope limited to the empirical order; its real content no more than the sum of sensation; its " objectification " or " categorical characterization," the synthesis of *a priori* forms and material elements. Seen in its core, the work is a tedious repetition of Kant; its main problem not one of religion, but of criteriology. In this regard, it is particularly significant that in discussing the possibility of any sort of " realism," in the sense of man's ability to attain reality as it is in itself (*das ding an sich*), the author refers to such a theory as " Platonism," seeing in Aristotelianism a merely accidental difference; that the " form " should be looked for in things themselves, not as separated. Such an attitude points out the absolute inability of the author to conceive of any essential difference between Plato and Aristotle; to suspect even the possibility of an intelligence whose object is *being*, reality, which in its turn is intelligible. For such a position implies metaphysics, and as such merits only the contempt of the author; but it is a contempt nourished by centuries of unchallenged assumptions, one that only reasserts the seemingly unbridgeable gap between the Thomist and his contemporaries.

Proceeding from a Kantian point of view, the findings of the author are not surprising. Religion's point of view is in no wise metaphysical, but moral; religious truths are not speculatively justifiable, nor intelligible, but

practically acceptable and experientially fruitful. To make religion reasonable, to free it from absurdity and the danger of science's opposition, is to make it non-reasonable and is to empty it of any pretended alliance either with a divine revelation made intelligible, even if incomprehensible, to man or with truths naturally attainable and defensible by speculative reason. Rather, in the face of the latter, the philosophy of religion will best serve religion by recognizing the inability of the human mind to reach any certain knowledge about God, and by that recognition provide an impetus for a volitional belief and hope in a suspected but undetectible reality. Thus the point of view of religion is to be made a calculated, confessed speculative agnosticism, inviolable by science, along with an acceptance of truths about God and man, imperatively practical, and practically imperative—even for the scientist.

Within the general framework of his book, Professor Paton has offered his reflections upon nearly all the main currents of contemporary philosophical thought. Especially noteworthy are his consideration of Logical Positivism, in the person especially of Professor Ayer, and his exposé of propositions of " non-sense "; the reflections upon phychoanalysis and religion; the occasional remarks concerning the Kierkegaardian horror and dread. For the Thomistic metaphysician, he repeats a question found in Kant, but in another sense presented by Cajetan, Suarez, the manualists, and one which underlies many contemporary discussions of the *quinque viae* in philosophy. Taken philosophically do they have a religious end; are they formally to be advanced as demonstrations precisely of God's existence? Repeating Kant's criticism, the author sees in them an implicit and invalid illation from the finite to the infinite, which amounts to an appeal to the ontological argument. While this difficulty is based upon the Kantian gnoseological assumptions, placing the realm of *being* beyond the grasp of the human mind, perhaps scholastic philosophers have provided grounds for the fact of the denial, by misrepresenting the function of Metaphysics in that phase called " Natural Theology," and by a consequent misinterpretation of the *quinque viae*. Professor Paton's examination of them affords another occasion for self-examination on this point.

There must finally be mentioned another point of view with reference to the *Modern Predicament*. It is the theological point of view. While the work purports itself to be philosophical, by reason of the matters upon which it touches, it becomes in many instances, a kind of super-theology. Of Sacred Theology St. Thomas has said that it exceeds all sciences in dignity, in certitude, in subject; that it pertains to Sacred Theology, as Wisdom, to judge concerning all others, and to reject as false what is opposed to its principles, for these are a kind of impression of God's own knowledge. Such a point of view is utterly distasteful to the present author; his frequent sallies against the doctrinal and theological positions

of the Church attest to that. But in spite of the author's distaste, the Catholic theologian does have in a true sense the privileged sanctuary which this author relegates to himself. From this sanctuary he must judge the work of Professor Paton as containing errors against the teaching of the Faith. Assuming as infallible the often ridiculously contrived theories of German historical criticism, he questions the Divinity of Christ, the inspired character of Sacred Scripture, the infallibility of the Church, etc. His considerations of the writings of St. Teresa and St. John of the Cross, as well as his discourses about grace are purely naturalistic. His discussion of Divine Providence is based upon an attitude that man is meant solely for a naturally happy life, free from pain or suffering, so that when these are present, there is no possible sense in which God can be understood as providently good. The details of his judgments are not of much consequence; it is enough to say that he has presumed to judge all things, and that on a basis of equality, with the backgrounds of both philosophical and scientific assumptions, and in so doing set himself above both the natural and the supernatural orders. Obviously such a distinction, with all that it entails in approaching the particular questions of God, man and the world, can have no meaning to one who has undertaken to make the very judgment which such a distinction would preclude. At the same time, the Catholic theologian has the duty and the right to judge, to point out error, to dispute over the natural truths whose misunderstanding has led to such errors; and to regret that where the synthesis of Faith, that is an elevation of man's intellect and reason, has been lost, there has emerged a synthesis of science and speculation that denies to man the power to know truth, and to God, the power to make Himself understood.

THOMAS C. O'BRIEN, O.P.

Dominican House of Philosophy
Dover, Mass.

BRIEF NOTICES

Imprudence in St. Thomas Aquinas. By Charles J. O'Neil. *The Aquinas Lecture*, 1955. Milwaukee: Marquette University Press, 1955. Pp. 176. $2.00.

If it be true that St. Thomas Aquinas' most original contribution—in the best sense of the oft misused phrase—to Christian thought is his moral theology, it can also be said that his treatment of prudence (II-II, qq. 47-55) is representative of that originality to a high degree. In his treatment of the virtues in general in the I-II, Aquinas insists on the necessity of prudence for the perfection of moral life. ". . . an intellectual virtue is needed in the reason, to perfect the reason, and make it suitably affected towards things ordained to the end; and this virtue is prudence. Consequently, prudence is a virtue necessary to lead a good life" (I-II, q. 57, a. 5).

Yet, for some mysterious reason manualists give rather short shrift to prudence, despite its key location among the virtues. Even the earliest moralists recognized its vital importance and its role in the moral life of man. Thus, Epicurus writes: "The greatest good is prudence; a more precious thing than even philosophy; from it spring all the other virtues" (Letter to Monoeceus, Diogenes Laertius, *Epicurus*, Book X, sec. 132). Perhaps the Roman philosopher is a trifle over enthusiastic, but the shift of emphasis on the part of the manualists from prudence to the other virtues remains baffling.

It is, then, heartening to see a contemporary Thomist of Dr. O'Neil's stature in an incisive monograph analyze the nature of imprudence in St. Thomas' moral system. The distinguished professor of philosophy at Marquette University sets out to explain a divergence in Aristotle and St. Thomas. The Stagirite makes no provision for any treatment of the vice of imprudence while "St. Thomas is perfectly at ease in assigning the vice of imprudence its proper place, its special sin, and its various parts." (p. 3) It is the author's contention that this divergence between two moralists of such repute can tell us something of the nature of man. We might add that it also deepens our knowledge of prudence itself since, as Aquinas reminds us, "One opposite is known through the other, as light through darkness." (I, q. 49, a. 1)

Dr. O'Neil first excludes the possibility that Aristotle had no word for imprudence or that he lacked a technique which he might employ to define it. He concludes that Aristotle very definitely ruled out the possibility of a vice opposed to prudence, one, that is, which might be called imprudence. The Aristotelian definition of prudence itself, insists the author,

rules out the possibility of a vice of imprudence. "The *logos* which is prudence, therefore, is in its last analysis sheer intelligibility. It is essence. Now essence is other than many things: cause, for example, and multiplicity, and existence. It is also tolerable of many things: cause, for example, and multiplicity, and existence. But that of which it is utterly intolerable is contradiction. Therefore, if there were an imprudence conceivable with this prudence there would simply be no prudence. One should recall that a triangle which is a non-triangle simply is not. And a prudence which is a true habit and a straight *logos* admits no imprudence." (p. 18)

Next Dr. O'Neil studies the structure of imprudence in St. Thomas utilizing Aquinas' *Commentary on the Ethics*, the *Secunda-Secundae*, and the *Commentary on the Epistle to the Romans* together with isolated passages from other works. It is this section that Dr. O'Neil displays a penetrating acuteness in delineating with clear precision the teaching of St. Thomas on the nature of imprudence. The author's examination of the development of the thought of St. Thomas as well as the implications latent in Aquinas' thought is worthy of high praise. He points out how St. Thomas transforms the Aristotelian moral man and makes him more beautiful "because in St. Thomas his intelligible beauty is that of the existing image of God." (p. 110)

Despite his obvious attempt at a lightness of style Dr. O'Neil's lecture does not always achieve that intelligibility we might desire in a work of scientific character. But notwithstanding his occasional lapses into somewhat complicated metaphors, his work is a significant contribution to Thomistic thought on a most neglected subject.

Beginnings: Genesis and Modern Science. By CHARLES HAURET. Translated by E. P. Emmans, O.P. Dubuque: The Priory Press, 1955. Pp. 319 with index. $3.25.

Guide to the Bible, Vol. II. By A. ROBERT and A. TRICOT. Translated by Edward P. Arbez, S.S. and Martin R. P. McGuire. New York: Desclee, 1945. Pp. 649 with index. $6.00.

The two generations from Pius X to Pius XII have witnessed a remarkable development in scriptural studies and interpretation. It is not that there have been many new interpretations; but rather, exegetes are coming to enjoy more and more the atmosphere of the freedom of the children of God. Certainly, Catholics may voice opinions today which they would not have dared to do fifty years ago, when even some of the great minds in the Church were unable to distinguish between Lagrange and Loisy. Those were indeed times which tried men's souls; the tide of rationalism had to

be checked, and this was done vigorously in the condemnations of the Pope and the decrees of the Biblical Commission. Slowly the clouds of controversy lifted, and by 1945 Pope Pius XII in his *Divino Afflante Spiritu* felt it was time to remind exegetes that there still remain " serious problems," with which they must " grapple again and again " in an attempt to find satisfactory solutions. The Pope also added, significantly: " Let all the other sons of the Church bear in mind that the efforts of these resolute laborers in the vineyard of the Lord should be judged not only with equity and justice, but also with the greatest charity."

Beginnings might well be described as a report on how the request of the Holy Father is being answered. M. Hauret presents first a general introduction to the whole Bible, and then proceeds " to explain, without attempt at erudition and from a practical point of view, the doctrinal content of the first three chapters of Genesis." In particular, he takes up the six days, the creation of the first man and woman, the Garden of Eden and the temptation, and the Protoevangelium. For the benefit of teachers he ends with an excellent chapter on " Practical Conclusions."

Although *Beginnings* is intended for the educated layman, not a few theologians would profit from even a quick reading. With a succinctness and clarity that make it highly recommended, this book shows the direction being taken by contemporary exegesis. From the pedagogical point of view it is eminently practical. At regular intervals the author draws up a list of conclusions which are *certain*, as well as those which are merely conjecture. He makes a distinction between the imagery and the historical reality of Genesis, since now greater emphasis is being laid on " the scenario and the literary form of the drama."

At first glance much of this modern interpretation seems contrary to the 1909 decree of the Biblical Commission which denied that we may teach these chapters contain fables derived from mythologies and cosmologies belonging to older nations, but purified of all polytheistic error and accommodated to monotheistic teaching by the sacred author. Indeed, the Commission reiterated just a few years ago that it saw no need to change its careful wording. M. Hauret, however, shows how we must take the decree against the historical background of the Modernism of the times. At the same time progressive exegesis must venture to take the background of mythological documents into account without succumbing to the temptation of reducing the Bible to the level of mythology. This is what Catholic biblical scholars seem to be doing with no little success.

Again, we may not teach that these chapters contain allegories and symbols destitute of any foundation in objective reality but presented under the garb of history for the purpose of inculcating religious and philosophical truth. This is quite different from the present tendency to treat those chapters under the literary form called " historical parable." This term,

incidentally, can be traced back to Cajetan. It is a giant step forward, and the exegetes have prudently limited this literary form to the first chapters of Genesis, for it cannot be applied to the history of Israel, nor to the Gospel accounts.

While great progress is being made, all the problems of Genesis are by no means settled, and M. Hauret is the first to admit it. The principle of St. Thomas and St. Augustine can still bear repeating, that "since Holy Scripture can be explained in a multiplicity of senses, one should adhere to a particular explanation only in such a way as to be ready to abandon it if it be proved with certainty to be false, lest Holy Scripture be exposed to the ridicule of unbelievers, and obstacles be placed to their believing" (I, q. 68, a. 1). The faith will never be embarrassed by works of the quality of *Beginnings*.

Guide to the Bible has a broader aim, as its title implies. The original French work was published more than fifteen years ago, but the translators have brought it up to date with copious footnotes, historical supplements and additions to the bibliographies. This volume contains a great deal of biblical theology, but its value for theologians will be uneven. They will undoubtedly be interested in the brief summaries of the life of Christ, the development of New Testament doctrine and the development of Old Testament doctrine on such points as suffering, angels and the resurrection of the body (implied in the burial of patriarchs; clearly taught in 2 Maccabees). One chapter, "The Bible and Theology," is also to be recommended. The rest of the volume, however, while providing excellent historical and geographical background for a better understanding of the sacred text, will be difficult reading for the most part. It presupposes a fairly good knowledge of archaeology. Therefore, it might be better first to read Albright's *Archaeology of Palestine*, so as to proceed from the more known to the less known. Nothing must be left undone to understand as well as possible the word of God.

Antiche e Nuove Edizioni degli Opuscoli di San Tommaso d'Aquino e il Problema della loro Autenticità. By Giovanni F. Rossi, C. M. Piacenza: Collegio Alberoni, 1955. Pp. 74 with index.

Father Rossi focuses needed and timely attention on an important critical problem—the question of the authenticity of the minor works (*opuscula*) of St. Thomas Aquinas. It is an important problem owing to the variety of subjects which the Angelic Doctor handles in these works; it is timely because two new editions of the *opuscula*, by Fr. J. Perrier (Lethielleux, Paris, 1949, which is still in progress) and by Fathers R. Spiazzi, R. Verardo, and M. Calcaterra (Marietti, Turin, 1954), have recently been published.

Unfortunately the Dominican editors of these editions are still under the spell of the exploded hypothesis of Père Mandonnet (formulated in 1910) that Reginald of Piperno, associate of St. Thomas for many years, compiled an official catalogue of his works. Consequently they reject as spurious, or print as doubtful, works that are not found in this catalogue. Michelitsch, Grabmann, and other serious scholars have demonstrated on incontestable and positive documentation that Mandonnet's hypothesis is pure imagination, that the only scientific method for establishing the authenticity of the *opuscula* is by studying the universal manuscript tradition. They proved that works edited by Mandonnet as doubtful are incontestably the work of St. Thomas.

Father Rossi subscribes to the Grabmann position and demonstrates the necessity of reexamining the whole problem of the authenticity of the *opuscula*. Only when the manuscripts have been studied will it be possible to fix the number, list the titles, and edit critically the entire *corpus* of the minor works of St. Thomas. To prepare for this undertaking he examines the problem of authenticity and studies the formation of seven of the earliest manuscript collections, six of the early catalogues, and seven printed editions of the minor works.

In terminating his study the author crystallizes his findings in a useful table of ninety-one reputed minor works of Thomas and cites the manuscripts, editions, and catalogues which contain or list them, indicating which have been placed in doubt. It thus appears that more than half the number have been challenged by one or other editor since 1490. At a glance we realize that the editors, thus, far, instead of pursuing a constructive course have been successively more destructive, wresting more and more of his scientific production from St. Thomas. Yet this process has never been carried out on the sole scientific basis admissible—an unbiased, scientific examination of the entire manuscript tradition. Mandonnet and the current editors have brought the process to the point of the ridiculous by the wholesale manner in which they have questioned the authenticity of various works. In case after case, supporting themselves on the theory of an official catalogue, they have listed and edited as doubtful, *opuscula* which have a venerable and strong manuscript tradition. For example, four of the early manuscript collections, three of the six catalogues, and three of the printed editions studied by Fr. Rossi list the *De natura accidentis* as authentic. Yet these editors consider it doubtful. Before deciding such an important point they should have studied exhaustively the evidence of the manuscripts. Rossi, on the other hand, in other studies of the problem, rehabilitated, on the basis of sound manuscript tradition at least eleven of the *opuscula* considered by the editors as doubtful.

Fr. Rossi has done a distinct service to Thomistic studies in writing this monograph. Once more, and again conclusively, he demonstrates that

Mandonnet's erroneous, and very harmful, hypothesis of an "official catalogue" of the Thomistic works should be relegated to the oblivion it so richly deserves, so that no more will it ride rough-shod over authentic manuscript tradition and over the memory and works of St. Thomas.

The Mystery of the Woman. Edited by Edward D. O'Connor, C.S.C. Notre Dame: The University of Notre Dame Press, 1956. Pp. 106. $2.75.

Filial piety is always to be admired. When it is accompanied by honest gratitude it is doubly pleasing. The University of Notre Dame has been humbly conscious of its blessings and the special protection it has received from its Mother and Patroness, Our Lady. This volume represents an attempt to express gratitude in a way which is most pleasing to Mary, through a sane and solid treatment of her glories and her prerogatives. The result is a confident and pleasing contribution to the literature of Mariology.

The University has chosen as the theme and limiting principle of the work the words of the Marian liturgy: "Rejoice, O Virgin Mary, Thou alone hast destroyed all heresies!" In developing the theme, the editors have included three doctrinal and two historical essays. The doctrinal essays discuss the office, preparation, and glorification of the Virgin Mother. The historical essays admire her obvious protection of the United States and her particular concern for her University, Notre Dame. The simplicity of theme and, in particular, the fortunate choice of essays and authors, have successfully resulted in a unified, brief, yet completely satisfying, sounding of the depths of Mary's theology.

The first doctrinal essay is titled "Theotokos—The Mother of God" and is authored by Walter J. Burghardt, S.J. of the Jesuit Seminary, Woodstock, Maryland. This essay is particularly valuable for its expression and discussion of the present day emphasis on Mary's relationship to the Mystical Body of Christ, His Church. There is a scholarly parallel drawn between Ephesus' declaration of Mary's maternity in regard to the physical Christ and the same doctrine in its extensions to the Mystical Christ. The implications of the parallel are especially well indicated through the solidity of theological reasoning.

The second essay was written by Ferrer Smith, O.P., Regent of Studies for St. Joseph's Province of the Dominican Fathers. His subject, "The Immaculate Conception," develops the implications of "Ineffabilis Deus" with particular regard for Mary's victory over sin through the glories of her grace. The reader will be impressed with the way these discussions complement the content of the first essay. With the Immaculate Con-

ception and its preparation in grace, Mary was well fitted for her physical and graceful Motherhood.

The third essay discusses the glory of Mary as manifest through her Assumption. This essay, written by Msgr. George W. Shea of Immaculate Conception Seminary, Darlington, New Jersey, emphasizes the contributions to theological thought and Catholic piety made by the recent definition of the dogma of Mary's Assumption.

The historical essays, written by Daniel Sargent and Eugene P. Burke, C. S. C., trace the evidences of Mary's benefactions in regard to the country as a whole and the University of Notre Dame in particular. Both authors speak with the authority of scholarship and experience. With the calmness of conviction, Mary's hand is seen in American History and the Notre Dame story. The two essays quite pleasingly round out the tremendous import of the practicality of the theological discussions of the first three essays.

The University of Notre Dame should be complimented for their wisdom in publishing these essays (originally delivered in symposium form to the students and faculty at the University in 1954.) In so doing, the University has given articulate voice to its own gratitude toward Our Lady and has made another positive contribution to solid theology and Marian devotion.

The Lord. By Romano Guardini. Chicago: Regnery, 1954. Pp. 546. $6.50.

The chapters which comprise this book are the "spiritual commentaries of some four years of Sunday services undertaken with the sole purpose of obeying as well as possible the Lord's command to proclaim him, his message and works." (p. vi) In his introduction, the author forewarns his readers that they may encounter unaccustomed ideas, turns of thought meant only to stimulate reflection on the mystery of God "which has been hidden for ages and generations, but now is clearly shown to his saints. . . . " (Col. 1: 26-27)

As the title suggests, Monsignor Guardini is concerned in this book with certain aspects of the life and teaching of Our Lord and Savior, Jesus Christ. He explains that these "meditations" (which must be taken in a broad sense) make no claim to completeness nor do they attempt to recount in chronological order or logical sequence the life of Christ. Rather, they select from Christ's life "this or that teaching, event, trait, miracle for thought, as it happens to warm to life." (p. vi) In point of fact, however, the matter covered does correspond, at least in broad outline, to the history of Our Lord's life, as the following section headings will testify:

I. The Beginnings; II. Message and Promise; III. The Decision; IV. On the Road to Jerusalem; V. The Last Days; VI. Resurrection and Transfiguration; VII. Time and Eternity. A brief conclusion (two and one half pages) completes the 87 chapters of this large book.

No one could reasonably deny that in certain respects, at least, this is a very profound book. It is undoubtedly the work of a man who is both learned and thoughtful. He moves in the world of mysticism and metaphysics, exegesis and history with equal grace. For his study of Christ Guardini has meditated often and long upon the Gospels, but he has also drawn much material from the Acts, the Epistles, and the Apocalypse. Finally, there are his personal reflections, which, more often than not, are " flights of the mind and the imagination to the higher levels of knowledge where the heart, if properly guided by theology, is perhaps more at home than is the mind itself, and where it opens doors to the deeper mysteries of the gospel story."

Despite the sublimity of its theme and the general high quality of its expression, *The Lord* left this reviewer somewhat dissatisfied. Briefly, Guardini, though often profound and always devout, is sometimes annoyingly vague; again, his pen is least facile when there is question of the exposition of scholastic theology. On the question of private property and the nature of man, Guardini, in speaking of the " baseness " of ownership, states: " The baseness lies in the root of property itself. Sin has destroyed the possibility of natural ownership without fetters upon the owner or injustice to others. In the sight of God even the most innocent ownership is unjust." (p. 181) Neither the proximate nor remote context is of much help in clarifying the thought of the author, especially with respect to the word " natural." Passages whose phrases are equally disturbing occur in the chapters on " Christian Marriage and Virginity," (p. 270 ff.) where the expression " natural " again is confusing, and " Destiny and Decision." (p. 208 ff.)

The Monsignor promised us " unaccustomed ideas." He is, indeed, a man of his word.

The Material Logic of John of St. Thomas. Translated by Yves R. Simon and Others. Chicago: University of Chicago Press, 1955. Pp. 672 with indexes. $10.00.

The need for source books of Scholastic Logic is evident enough inasmuch as text-books and manuals simply cannot supply the basic materials from which their concise statements are drawn. This, the English translation of certain sections of the classical *Logica Materialis* of John of St. Thomas, places at the disposal of the serious student one of the major achievements of Thomistic Logic.

Recognizing that the formalized, scientific language of the Scholastics does not readily lend itself to precise translation, the present translators give evidence of having expended every effort to express the thought in clear, simple, and modern language. In the main they have been completely successful in giving a true and accurate expression of the doctrine of John of St. Thomas. There are, however, a few instances in which the use of different terms or a change of phrase may have better served the purpose of the student using the text. Unhappily, the notes provided by Dr. Simon do not seem quite as successful as the translation. In some cases those used to illustrate and explain the text are too prolix, a difficulty that could be overcome by questions directing the reader to common experiences of reality.

Beginners, of whom Jacques Maritain speaks in the Preface, are often confused by the division of Logic into material and formal even to the point of missing the essential unity of the science. It would seem to this reviewer that a clear presentation and explanation of this unity would have added immeasurably to Dr. Simon's Foreward. Too, his " the relevance of the division into material and formal logic is indirect in the case of the first two operations " is somewhat unsatisfactory. The fundamentals of logic realized in the first and developed in the second operation of the mind determine largely the doctrine of the third operation. To speak of them, then, as having indirect relevance is true, but at the same time they are of enormous importance to the science of logic. John of St. Thomas himself is very careful in his development of the doctrine of the Predicables, and it may be disputed that they are of lesser clarity than that which results from them.

This translation is a definite and valuable contribution to fill the need for basic texts in philosophy, and the above points of criticism in no way detract from this value.

Dogmatic Theology, Vol. I.—The True Religion. By G. Van Noort, Translated by John J. Castelot, S. S. and William R. Murphy, S. S. Westminster: Newman, 1955. Pp. 382 with index. $6.00.

This first volume of a projected ten-volume series introduces itself to the reader by a double introduction, one to the entire field of theology, the other to fundamental theology. The bulk of the book, however, concentrates on an abstract analysis of religion itself followed by a consideration of the concrete truth of the Christian-Catholic religion. Two appendices constitute particular apologies: the first treats revealed religion before Christ, the second Christ's teaching and St. Paul's position regarding the Parousia. Besides the general index, there are special indices for Scripture and for authors.

The translation into readable, not excessively technical, English gives evidence of the qualifications of the translators who unite this translating ability with their special scientific competence. It was a happy thought to combine a professor of scripture with a professor of dogmatic theology. The publisher likewise has done well to produce a handsome volume with large, readable print. Yet one wonders about the wisdom of such an expensive, and sometimes unnecessary, layout. For instance, there are six pages of introduction and notes for the first article when there are hardly five of actual text. But the work itself is destined, we are told, for a very wide reading public: the priests who confess their long years in the ministry have made their consultation of Latin texts onerous, the seminarians who find their mastery of the theological language insufficient for genuine understanding, but especially the Sisters, Brothers and educated laymen who want to consult a complete and technical study of theology in the vernacular. Some of these people are going to find the expense of ten volumes excessive, and might wish for a more compact arrangement.

The formal content of this volume, however, is well chosen. Too often fundamental theology becomes a miscellaneous file; in this case, there has been a prudent use of the principles of selection. One example is the brief historical outline which is well conceived and executed. Doubtless its very brevity and selectivity will make any reader, with particular preferences, disappointed at some omission. The present reviewer, for instance, would suggest at least one addition. While the omission of St. Anthony, the first Franciscan teacher and doctor, may be justified by the fact that the frame of reference is systematic theology, one wonders at the little attention given to the Scotistic school of the golden age. A quotation from a non-Scotistic theologian would be apt: "*Scoti Schola numerosior est omnibus aliis simul sumptis.*" (Joannes Caramuel, *Theologia Internationalis*, lib. 2, cap. 3, Disp. 10, #1264, p. 273. Lugduni, 1664.)

The presentation and critique of the method of immanence given as an epilogue to the article on the recognizability of revelation is splendidly done. There is a place for a psychological approach as well as the philosophical and historical. The two need not, indeed should not, be mutually exclusive. The treatment of the sublimity of the Christian-Catholic religion, to cite but one example adroitly employs the two approaches to a very successful conclusion.

The general fault of the volume, if fault must be found, is the paradoxical one of at once too much and too little. Probably the fault is endemic to apologetics itself which, though it had its rise in the early Christian apologies, has developed very slowly so that it is only within the last century that it has come to be considered as a science demonstrating the rational credibility of the Catholic faith and a science in its own right. In this slow development, apologetic has embraced much material which

belongs in other places, to comparative religion, natural theology, history, dogma properly speaking and sacred scripture. While the present work, as has already been said, wisely employs the principle of selectivity in order to avoid repetition, from a material point of view at least, three volumes of apologetics, even under the aspect of an introduction to theology, seem disproportionate in a ten volume work.

Likewise, since the present work is not a simple translation, but a revision of a revision, there is an unwieldly conglamoration of footnotes and annotation in the text as well as at the bottom of the page; then there are copious references, comments and further additions at the end of each section. Some of these could be pruned; some extended. One example may be sufficient; number five on page 30 states: " E. Haeckel considered the Catholic veneration given to relics and images a vestige of fetishism." There is no further indication as to Haeckel's identity, to where or why he said this. Still speaking of " too little " and the need for extension, the translating revisors might have touched on the reestablishment of Israel in connection with Christ's predictions about the temple and the city of Jerusalem and His predictions about the Parousia. While it is true that the Jews do not yet have the old capitol and that the new Israel may not be the religious Juda, the contemporary fact of the reestablishment has import for apology if not for apologetics.

Nevertheless, imperfect though it is, this work fills a real need, and is a worthwhile contribution to American culture as well as to Catholicism. From the technical point of view, a great service has been rendered in simply bringing extensive bibliographical references up to date. The bibliography shows something else, that other vernaculars have works of theology which are not only complete and technical, but original. Perhaps one of the greatest services of this translation-revision is that it paves the way for such a work in English.

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